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CONTRACTS FOR SIX STEAMERS.

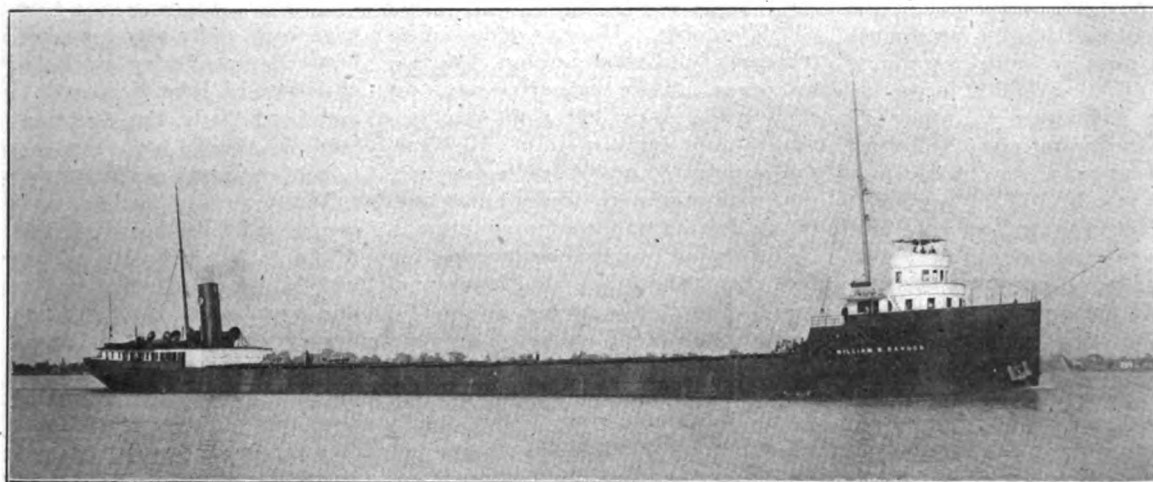
The Southern Pacific Co., operating the Atlantic Steamship lines, is planning a considerable extension of its coastwise steamship business which will include larger services to New York from Gulf ports.

Contracts are shortly to be let for the construction of six steamers of dimensions approximately as follows: Length over all, 440 ft.; beam, 52 ft.

found that we handled for Baltimore more than 50,000 tons a year. This freight came to New York, and was in large part trans-shipped from here by rail. If practically 1,000 tons a week was awaiting a roundabout way to reach the desired market, then we thought another 1,000 tons or more could be awakened into life if we went after it. This is what we are now going to do.

"We will start the line with three

rial needed in the east from the western slope, clear out to California. This means dried fruits, hides, leather manufactures, lumber, etc. In Texas we tap the cotton and rice fields, as well as hides and leather. Here, therefore, is a return traffic for us at Galveston. At New Orleans we have again cotton, rice, sugar, molasses, rosin, turpentine and oils. The business awaiting us to move to points is easily distributed from Baltimore.



THE NEW STEAMER W. B. DAVOCK OF THE VULCAN STEAMSHIP CO.'S FLEET, GOING UP ST. CLAIR RIVER.

and depth of hold, 35 ft. The vessels are to be of about 5,000 tons deadweight capacity with an average sea speed of 15 knots. It is expected that their construction will be begun within the year. In speaking of the plans for improvement Mr. C. W. Jungen, manager of the steamship service, said:

"I had prepared some months ago a list of the tonnage supply passing up and down the Atlantic coast," he said. "This showed the chief points of accumulation and the principal points of distribution. In this list we

steamers. Our fleet here consists of 19 vessels and we can spare two or three for the Baltimore trade whenever that justifies it. The new line will most likely be opened with the smaller boats we own. These are the average ocean-going coastwise freighters and will carry 2,200 tons deadweight. If we can load three of these to and from Baltimore in weekly sailings we will feel that our venture has been justified.

"Our lines will run in close connection with the Southern Pacific railway, which brings vast quantities of mate-

What we will carry back you must ask your own people, but we are convinced the trade is there awaiting us.

"While we do not claim any close connection with the railways and will work in favor of none, still we deem the rail traffic essential to our success and profit. We can pull together as a two-horse team and get better results than if a single animal attempted to carry the load. We will draw from the Southern Pacific, of course, both at New Orleans and Galveston. We expect, equally as well to return them freight at both points.

The Illinois Central will serve us in its territory, and all the subsidiary lines of these corporations will help swell the volume of trade in both directions."

MASSACHUSETTS BOARD OF BOILER RULES.

The members of the Massachusetts state board of boiler rules, a board created by the legislature this year, representing practically all elements of the public especially interested in boilers, and charged with large responsibilities and very important duties, were appointed by the governor recently and have been confirmed by the council. The board as appointed consists of the following:

Joseph H. McNeill, of Melrose, chairman; William M. Beck, of Everett, (for three years) operating engineer; John A. Stevens, of Lowell, (for three years) representing the boiler-using interests; Frederic H. Keyes, of Newton, (for two years) representing the boiler-manufacturing interests, and Robert J. Dunkle, of Boston, (for two years) representing the boiler insurance interests.

Chairman McNeill is also chief inspector of the boiler inspection department of the district police.

During the last session of the Massachusetts legislature a large number of bills were presented pertaining to matters affecting boiler inspection work. The committee to which all these bills were referred submitted to the legislature a new bill which was enacted into law. This new boiler inspection law is drawn on very progressive lines and gives the state boiler inspection department jurisdiction over all boilers in the commonwealth. The new law, known as chapter 465 of the acts of 1907, takes effect Oct. 1, 1907, with the exception of the provision for the appointment, by the governor, of the board of boiler rules, which is made up as stated above.

The law provides that it shall be the duty of the board of boiler rules to formulate rules for the construction, installation and inspection of steam boilers, and for ascertaining the safe working pressure to be carried on boilers, to prescribe tests, if it deems necessary, to ascertain the qualities of materials used in the construction of boilers; to formulate rules regulating the construction and size of safety valves for the boilers of different sizes and pressures, the construction, use and location of fusible safety plugs, appliances for indicating the pressure of steam and the level of water in the boiler, and such other

appliances as the board may deem necessary to safety in operating steam boilers; and to make a standard form of certificate of inspection.

Chairman McNeill, of the board of boiler rules, is a practical mechanic, having since boyhood been successively an apprentice, draftsman, journeyman, marine engineer, stationary engineer and master mechanic. In 1898 he entered the boiler inspection department of the Massachusetts district police as an inspector of boilers and examiner of engineers and firemen, and in 1906 he was appointed chief inspector of the boiler inspection department as the result of a competitive examination held by the Massachusetts civil service commission.

Mr. Beck, of the board, is widely known in engineering circles for the active part he has taken in legislative work during the past three years. He was first an apprenticed blacksmith, afterward he took up locomotive work with the Boston & Maine railroad, for 15 years he was employed as a stationary engineer, and for the last year and a half he has been with the Knickerbocker Ice Co. as master mechanic on the Kennebec river.

Mr. Stevens is chief engineer of the Merrimac Mfg. Co. of Lowell and allied interests. He was indorsed to represent the boiler-using interests by representative manufacturers, including the Arkwright club. He studied at the university of Michigan, and afterward served an apprenticeship with a western concern manufacturing marine and stationary engines. He took up marine engineering on the great lakes, and at 27 years of age was granted a license as chief of ocean steamers of unlimited tonnage. After seven years he came east and entered the employ of the International Navigation Co., being rapidly promoted to the position of first assistant engineer of the United States mail steamship St. Paul, which he resigned in 1896 to become chief engineer of the Merrimac company, which had chosen him for the work of reconstructing its plant, which he has successfully carried out. He has now taken up the construction work of the company's mills in the south, as designing and consulting engineer. Mr. Stevens has been granted eight patents on boilers.

Mr. Keyes lives in Newtonville. He was indorsed by the New England boiler manufacturers' association, representing all the leading boiler manufacturers of Massachusetts. He was graduated from the Massachusetts Institute of Technology with

honors as a mechanical engineer. He was for a time engaged with large manufacturing concerns in Boston and Chicago, then returned to the Institute of Technology as an instructor in mechanical engineering, taking up laboratory and testing work for 4½ years. He is now general manager of the works of the Robb-Mumford Boiler Co. at South Framingham.

Mr. Dunkle is a native of New Jersey. He embarked in the insurance business in the south, doing a large amount of boiler and liability business. In 1893 he came to Boston, continuing in the same line. In 1898 he became associated with O'Brien and Russell, and in 1901 he was admitted to a partnership, devoting his attention particularly to the boiler, accident and liability branches of the business.

GREAT SHIP BUILDING COMBINE.

One of the largest combinations in the world for the building and complete equipment of war vessels and other ships has recently been effected through a union of interests of two of the great ship building firms of Great Britain, viz., Harland & Wolff, Ltd., of Belfast, and John Brown & Co., Ltd., Clydebank. Negotiations have been under way for some months between Sir Charles Maclaren, M. P., chairman of John Brown & Co., Ltd., and Lord Pirrie, the chairman of Harland & Wolff, Ltd., for a combination of interests of the two firms.

The terms as finally arranged and approved by the board of John Brown & Co., of which Mr. Charles Ellis and Mr. J. G. Dunlop are managing directors, and Mr. Bernard Firth, deputy chairman, provide not for an amalgamation, but for an exchange of a certain proportion of shares in the two firms, which will insure friendly co-operation in matters of business and finance. The share capital of Messrs. John Brown & Co., Ltd., will be increased to provide for the necessary issue. The capital assets of Harland & Wolff, Ltd., are made up not only of the extensive ship yards and engine works at Queen's island, which are probably the largest in the world, but of reserves represented by various investments of great value.

The two firms have hitherto turned out the largest and best known Atlantic passenger liners afloat. The Lusitania, built by John Brown & Co. at Clydebank, now undergoing her trials, is the largest vessel in the world, and the Adriatic, recently delivered by Harland & Wolff, Ltd., ranks next

amongst British-built ships now in actual service. The Saxonia, Caronia and Carmania are Clydebank vessels, while the Baltic, Cedric and Celtic were built at Belfast. The two firms are thus well fitted to enter into an alliance for a class of work in which they are unrivaled, both as regards financial and mechanical resources, the extent of which is shown by the production of their respective yards and engine works.

Harland & Wolff, Ltd., have not engaged in admiralty work, except that they have built some battleship engines for the British government, but John Brown & Co., Ltd., have a distinguished record for battleships, cruisers and torpedo craft for the British and Japanese navies; only recently they successfully launched the Inflexible, one of the new armored cruiser class, little inferior to the Dreadnought in power. The Hindustan and the Sutlej are among the recent warships delivered to the British navy by this firm. The distribution of business between the two firms will therefore follow natural lines. At the same time the cost of building will be cheapened, and the duplication of certain classes of plant can be avoided in the future. In other respects no change will take place in the management or administration of either firm, as they remain separate both in capital and staff and boards of directors. No doubt the customers of both firms will be gainers by the combine, both as regards price and speed of construction.

John Brown & Co., Ltd., and their subsidiary companies, of which Thomas Firth & Sons, Ltd., Sheffield, is the most important, will find a steady market for their shafting, flues, cables, heavy steel forgings and castings and turbine machinery required by the Belfast firm. The great repairing works at Southampton which are now under construction by the Belfast firm will also relieve both yards so far as may be desirable in case of glut in repairing work. With regard to tonnage output, both firms have frequently been at the head of the list, and combined they cannot be touched by any existing rivals.

They will employ in collieries, blast furnaces, iron mines at home and abroad, steel works, armor-plate mills, ordnance works and in their engineering works and ship yards over 30,000 men, earning more than \$2,250,000 in a year in wages. It is interesting to note that John Brown & Co., Ltd., are closely allied with Cammell, Laird & Co., Ltd., as part-

ners in the Coventry Ordnance Works, Ltd., one-half of the shares in this concern belonging to John Brown & Co., Ltd., the other being held by Cammell, Laird & Co., Ltd., and the Fairfield Ship Building Co., Ltd. When these works are completed, which will shortly be the case, John Brown & Co., Ltd., will stand on the same footing as Vickers, Son & Maxim, Ltd., and Sir W. G. Armstrong, Whitworth & Co., Ltd., in regard to the complete equipment of a battleship with guns, gun mountings and armor plates, while there is no requisite of fitting out a warship or a passenger liner which is not actually manufactured in the works of the Belfast and Clydebank firms.

SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary of naval construction shows a steadily diminishing list of vessels under construction. The Union Iron Works has turned the armored cruiser California over to the Mare Island navy yard for completion. The Fore River Ship Building Co. has nothing bigger than a scout cruiser on the stocks, the battleships of the Delaware class not being as yet in the construction list. Following is the summary:

Name of vessel—	Building at—	—1907—	
		Per cent of completion. June 1.	July 1.
BATTLESHIPS.			
Mississippi	Wm. Cramp & Sons.....	87.47	88.96
Idaho	Wm. Cramp & Sons.....	79.9	81.98
New Hampshire	New York S. B. Co.....	72.5	75.4
South Carolina	Wm. Cramp & Sons.....	14.57	17.48
Michigan	New York S. B. Co.....	16.4	19.4
ARMORED CRUISERS.			
South Dakota	Union Iron Works.....	97.4	97.5
North Carolina	Newport News S. B. Co.....	80.69	83.77
Montana	Newport News S. B. Co.....	74.89	76.96
SCOUT CRUISERS.			
Chester	Bath Iron Works.....	78.60	81.26
Birmingham	Fore River S. B. Co.....	75.3	81.6
Salem	Fore River S. B. Co.....	77.0	80.8
SUBMARINE TORPEDO BOATS.			
Sub. T. B. No. 9.....	Fore River S. B. Co.....	95.0	97.0
Sub. T. B. No. 10.....	Fore River S. B. Co.....	92.6	95.0
Sub. T. B. No. 11.....	Fore River S. B. Co.....	95.0	97.0
Sub. T. B. No. 12.....	Fore River S. B. Co.....	93.0	95.0
COLLIERS.			
Vestal	Navy Yard, New York.....	24.6	30.7
Prometheus	Navy Yard, Mare Island.....	0.7	0.7
TUG BOATS.			
Patapsco	Navy Yard, Portsmouth.....	10.0	16.0
Patuxent	Navy Yard, Norfolk.....	6.0	9.0

California delivered to Navy Yard, Mare Island, for completion.

MARE ISLAND YARD RUSHED.

The Mare Island navy yard, San Francisco, Cal., is the scene of much activity now that the time of placing the battleship California in commission is at hand. It is believed that this will be accomplished before July 20.

The collier Prometheus is to be built at this yard also and preparatory work is now being rushed.

The protected cruiser New Orleans, which has been receiving repairs and alterations, will probably be placed in commission this month although the large amount of work on other vessels is causing some delay on her.

The torpedo boats Fox and Davis were in dock recently for the removal of their boilers upon which the department of steam engineering is to make alterations and repairs.

With the beginning of the present fiscal year, a few days ago, hundreds of thousands of dollars became available for new work and jobs yet uncompleted. About \$30,000 will be expended upon the Albatross. In addition an appropriation of many thousands is available for the transforming of the Wyoming into an oil burner.

The idea is prevalent that the government will take over the Union Iron Works, San Francisco, to care for the increased business and more especially for the docking facilities it would afford.

The New York and Glasgow steamer California was recently launched from the yards of the D. & W. Henderson Co., on the Clyde, Scotland.

The California, which is a strikingly handsome and imposing vessel, is divided into nine water tight compartments to insure safety and has six decks. She is to be fitted with the Marconi wireless telegraph apparatus and will take her place on the Glasgow service Sept. 14, 1907.

REVIEW OF SHIPPING.

John White, 23 Great St. Helen's, London, E. C., has issued his customary half-yearly review of shipping. He says:

It was an old saying, but never more true than of late, that the metal market is a reliable barometer of trade. During the past two years this market has been advancing, and trade in all parts of the world has exceeded all previous records. This enormous trade has only been possible by the means of transit supplied by shipping, but it is unfortunately the fact that shipping has been the industry that has least benefited by this activity. This practical lesson ought to impress itself upon ship owners, who appear to have been slow to realize the fact that over supply of tonnage and want of cohesion in fixing freights have prevented their reaping the benefit they should have derived from the great volume of trade that has been passing.

The year commenced with ship builders better employed than they are today, there have been few orders given during the past six months for ordinary cargo steamers. The high price of material causes builders to require prices on contracts that owners of cargo steamers cannot follow. It will take long to approach equalizing supply and demand in tonnage, but the cessation of orders is all in the right direction. The contracts of the half-year have been mostly for regular liners, specialties such as oil carriers and important orders for foreign liner owners. The liner is now encroaching so much into the tramp steamer's trade, by taking cargo from several ports to more than one port of discharge, that the addition of such tonnage cannot now be viewed in the same light as in the past, but is becoming a serious competitor in market freights.

It is not very useful for comparison to give at the half-year details of production, tonnage, building, etc., as such are to a great extent carrying forward of orders given in the previous year. Such statistics are therefore deferred to my report issued at the beginning of the new year.

Prices of ready steamers, new and second-hand, are practically the same as at the end of last year. The poor rates of freight current, increased cost of coal, high wages of seamen and of labor discourage buyers and make sales more difficult.

Steel ship plates are now £7 10s per ton, which was the price at the end of last year, although in January a little more was demanded. Prob-

ably the market is a little firmer today than it was in December last. The high price does not arise from ship building orders but from the demand from abroad, especially America, and also at home for raw material in consequence of the active trade in railway and building plant.

Coal has been high throughout the half-year, best steam coal in Wales touched 20s in February, and is now 19s, and in the Tyne has advanced from 12s 6d in January to 14s 6d now current. The prices of coal are higher also in New South Wales, India and all foreign stations, and exceptionally high on the west coast of America.

Labor troubles have been numerous more especially abroad since the commencement of the year continuing the bad record of the previous year. Strikes provide undesirable employment for steamers by causing delay in loading and discharging although minimizing the over supply of tonnage, but the injury to trade generally and to the workmen themselves is incalculable. There have been strikes of laborers at New York, which, it is stated, caused some of the regular liners to have to bring cargo back to England and the continent, being unable to discharge such in time for the steamers to sail on their advertised dates. This strike after many weeks ended as usual in the men returning to work on the old terms. Strikes of officers and seamen of German steamers, of workmen in German ship building yards, of stevedores' men in Hamburg, the latter necessitated men to be sent from England—of seamen in French ships and also Italian steamers—dock laborers at Trieste and Rotterdam—coal laborers at Port Said—railwaymen and other laborers in South America. At home the engineers' demand for an increase in wages appears likely to be withdrawn. It is to be hoped for the men's sake they will be content with the present good earnings, for it seems impossible for employers in the present state of trade and the very moderate prospect of new orders to concede any increase.

Combinations continue to extend amongst ship building and ship owning concerns. The combining of interest of Messrs. Harland & Wolff, Ltd., of Belfast, and Messrs. John Brown & Co., Ltd., of Clydebank and Sheffield, etc., etc., will doubtless be comprehensive of every feature of complete ship building, either of merchant ships or armored warships. In ship owning, combinations have been made by owners of British liner tonnage, and the same has been adopted

amongst German companies and by American companies principally engaged in local services.

Since the commencement of the year the freight war between British companies and a German company trading with India has terminated. During the half year a shipping conference between the representatives of the United Kingdom, Australia, and New Zealand has been held in London, and, so far as can be judged, does not appear to have resulted in any arrangement that will make the colonial trade more attractive to British shipowners. At this conference one of the colonial representatives and our chancellor of the exchequer suggested the removing or the reducing of Suez canal dues to be an object worth aiming at. This question should certainly be aimed at very straight, the dues being such a heavy burden. In my report of Jan. 1, 1906, the following remarks are made on this question: "It is an international question that deserves attention, whether such a high-way, having repaid its cost with liberal interest, should continue to be a joint stock 25 per cent profit-earning enterprise, or follow the rule with all high-ways, and become free of toll, subject to provision for expenses of upkeep."

The half year has witnessed the passing by our parliament of an act to include seamen under the Workmen's Compensation Act, entailing an additional heavy charge on British vessels, and thus increasing the disadvantage our ships work under as compared with foreign vessels. Increased expense of working our ships has also been added by an amendment of the Merchant Shipping Act, involving fastidious burdens in regard to provisioning of crews.

FREIGHTS.

The half-year opened better than it closes, and outward rates have advanced in consequence mainly of the decrease in homeward rates, and also influenced by great delays in discharging abroad. Detention has arisen at our coal ports by the facilities for loading being inadequate for the much greater length of modern steamers. With the exception of a rapid rise in freights from River Plate, the end of January, which appeared to come as a great surprise, and continued firm for two months, since which they have dropped to 12s. 6d. (up river), there has not been any market of special feature. Eastern homeward rates have been the most consistent, improving a little the first three months, and are now about the same as at the end of last year when they were considered fair, but increased cost of coal is a serious item on these

voyages. A considerable business has continued out to west coast of America, but labor charges on the coast are very heavy, delays long, and homeward employment nominal. American, also Black Sea, markets homewards have been very low throughout the half-year. Baltic outward and homeward freights have been a little better than the previous year. The coal trade from Tyne and Wales to the continent has been very active, and sizes of steamers employed largely increased, steamers up to 7,000 tons being engaged from the Tyne to the continent.

Although the shipping transactions of the half-year have been numerous, there has not been anything remarkable, and a decided improvement will be necessary in the next six months to make the year at all satisfactory to shipbuilders and shipowners.

DAKOTA A TOTAL LOSS.

Capt. Fred W. Young of Liverpool arrived recently in San Francisco having made a complete examination of the wrecked hull of the steamship Dakota lying on Osani Reef. Capt. Young, whose achievements in salvaging vessels have made him an international figure among wreckers, reports that the hull is entirely submerged, is broken in three parts, and that salvage if attempted would be inconsiderable. He says:

"I spent two months, from April 22 until June 22, examining the wreck of the Dakota. I had a diver with me, and in addition to his services I employed several Japanese. Nothing remains above the surface but a small length of the foremast.

"The vessel lay balanced across the summit of a rock and was broken completely in two by the high seas. The forward part slid down on the side of the rock and lies in seventeen fathoms of water. The after part broke in two again, so that the vessel lies in three pieces.

"The Dakota is a complete loss. The divers went all through the wreck and reported that her engines were reduced to a mass of scrap iron. Of the cargo, that portion which was stored in the after part of the vessel is a total loss, while there will be a small salvage on that which was in the forward hold.

"I made arrangements with a Japanese contractor, and he is now at work taking bales of cotton out of the forward part of the wreck. Part of this will be injured by the salt water, but the inside of the bales is dry and we expect to save something on this part of the cargo.

"The loss is one of the largest that the London underwriters ever sustained, and it is probable that the wreck of the Dakota will cost them \$3,000,000."

ITEMS OF GENERAL INTEREST.

Orders have been received at the Puget Sound navy yard at Bremerton, Wash., for the hastening of the work on the battleships Oregon and Wisconsin which are at present undergoing extensive repairs.

The Hudson bay steamer Mount Royal, running on the Skeena river in British Columbia, was wrecked in a tortuous canyon with a loss of six lives. The steamer was a stern-wheeler and was insured in England. She is valued at \$30,000.

The steel collier Everett, built by the Fore River Ship Building Co. for the New England Coal & Coke Co., has been equipped with submarine signals. This collier is 400 ft. long, 53 ft. beam and 32 ft. 6 in. deep, having a carrying capacity of 7,200 tons.

The North German Lloyd liner Kronprinz Wilhelm collided with an iceberg off the Newfoundland banks last week but through quick work on her bridge and in her engine room, escaped with merely a dented bow and the loss of much paint on the starboard side.

The French battleship Hoche was sunk in a slip where she had been lying at Toulon in order to extinguish a fire which had started in the sail room. The origin of the fire, which was the third within a month at Toulon, is a mystery. The Hoche is not damaged seriously. A rigid inquiry is being conducted into the cause of the fire.

The Mitsu Bishi ship yard at Nagasaki, Japan, last year built six ocean-going steamers with a gross tonnage of 12,890 tons, four torpedo boats for the Japanese government and one steel caisson. The work on hand includes two vessels for the Japanese government and seven merchant ships. This yard is the largest in the island empire.

An accident similar to that occurring to the French submarine Gymnote has been sustained by another French submarine, the Rubis. While undergoing trial at Cherbourg, July 6, and when the water had partially submerged the vessel, the mechanics stationed inside to keep a lookout came hurriedly out of the hatch and reported that she was filling with water, apparently from an open valve. All the costly electric apparatus on board was ruined. No lives were lost in the accident.

The tug Governor Hubbard, built at the plant of the Neafie & Levy Ship & Engine Building Co., Philadelphia, left that establishment July 12, bound for the Pacific coast via the Straits of Magellan. The trip will take three months.

The Hubbard was built for the Hammond Lumber Co., of California, and will be used in towing lumber rafts from Puget Sound to San Francisco and other points on the Pacific coast. The tug is of steel throughout and registers 412 tons.

The recently conducted series of tests of submarine boats under the supervision of a naval board has resulted in a report unanimously in favor of the Octopus type, and as this view is concurred in by the board of construction and the secretary of the navy, the entire award of \$3,000,000 authorized by the last congress for the purchase of submarine boats will in all probability go to the Electric Boat Co., New York, the builders of the Octopus type.

The English managers of the International Mercantile Marine Co. have decided that the American line service between Philadelphia and Liverpool shall maintain regular weekly sailings throughout next winter. Last year, as in previous winters, the service was cut down from five to three steamships, with sailings every ten days, instead of every week. It is announced that the decision is based on the prospects for increased foreign commerce although from November to March there is little steerage business.

The Sound steamer City of Lowell, from Norwich with 400 passengers on board, rammed a car float in the East river, New York, recently, sustaining serious damage to her bows, although entirely above the water line. The City of Lowell was temporarily repaired and made her return trip after which she was laid up for repairs. The Lowell is of steel construction and is one of the fastest boats plying on the Sound. She was built in 1896.

Prospects for Galveston, Tex., to become an important point for the landing of immigrants are very bright as a \$250,000 federal landing station is to be erected which will surpass any other of the sort south of Baltimore. Frank P. Sargent, commissioner of immigration and naturalization has stated that Galveston will logically become second to New York in the number of immigrants handled. A new line of emigrant steamers is contemplated by a newly-established steamship agency and the Hamburg-American line is to inaugurate a direct passenger service at an early date. The North German Lloyd is at present the only line handling immigrants at this port and the competition is expected to result in the landing of 50,000 foreigners there in the next twelvemonth.



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MAKING A MAN O' WARSMAN.

The Bureau of Navigation of the Navy Department has just published a little booklet entitled "The Making of a Man O' Warsman." Probably the department is experiencing some difficulty in getting recruits and take this means of dispelling erroneous impressions concerning the hardships of the service. The booklet is written in popular style and makes everything as clear as sunlight. It will doubtless have the effect of greatly stimulating enlistments for the booklet is candid and convincing. In point of fact, after reading its lucid explanation of the advantages of naval life one regrets that he has passed the age limit or that other circumstances compel him to set aside a form of life so alluring. This booklet does not concern the commissioned officer, who obviously comes to his station through another avenue, but

is directed rather to the layman, the man in the street, and powerfully compares the career open to him in the navy with a career in the factory, farm or the office.

From the standpoint of well being alone the navy offers insuperable advantages. The bluejacket's leisure hours are many, and there are numerous pleasures and entertainments aboard ship to occupy his time. There are fencing and boxing matches, concerts aboard ship every night by the ship's band, short concerts each morning during breakfast hours, dancing, minstrel shows by the crew's own troupes, use of the ship's boats when members of the boats' crews wish to go sailing in harbors, to visit points of interest and foreign ships, or to go fishing. Moreover there is football, baseball and boat racing, for which the government furnishes uniforms and racing boats. The government also furnishes fencing foils, boxing gloves and most everything that will enable the bluejacket to enjoy himself. Contrary to the general impression the time allowed on shore is very liberal. One-fourth of the crew of a man o' warsman is allowed to go to shore each day after the afternoon drills, whenever practicable, and may remain ashore until the following morning. On Wednesday and Saturday afternoons leave is granted immediately after dinner and on Sunday directly after the captain's inspection, with the privilege of remaining on shore until the following morning. Shore leave is regulated by conditions but it is certainly more liberal than days off are in a business office.

As to the food supplied, it is the best that can be bought and is far more varied than that furnished in an ordinary home. Here are a few bills of fare taken at random:

SUNDAY.

BREAKFAST.

Baked Pork and Beans.
Bread, Butter and Coffee.

DINNER.

Roast Veal or Roast Beef and Gravy.
Stewed Tomatoes and Mashed Potatoes.
Bread, Butter and Coffee.

SUPPER.

Bologna Sausage, Cheese, Potato Salad.
Bread, Butter and Tea.

MONDAY.

BREAKFAST.

Ham Omelet, Potatoes.
Bread, Butter and Coffee.

DINNER.

Pea Soup, Boiled Ham, Potatoes.
Bread, Butter and Coffee.

SUPPER.

Fresh Meat Pie, Fried Potatoes, Fresh Fruit.
Bread, Butter and Tea.

The man o' warsman sleeps in a hammock. The layman who has attempted to sleep in a hammock might think this uncomfortable, but the sailor's hammock is an entirely different thing from the common or porch variety of hammock. The sailor's hammock is made of canvas, contains a hair mattress and is as comfortable as any bed, being provided with two blankets of good quality. Shower baths of both hot and cold salt water and hot and cold fresh water are provided. If the ship is in a climate where the water is warm enough the men are permitted to bathe in the sea.

The navy requires men of varied knowledge to operate its ships. It requires seamen to steer, man the boats, handle the anchors and clean the ships; clerks, stenographers and book-keepers to attend to the clerical work; nurses to care for the sick on ship and the hospitals on shore; commissaries, stewards and cooks; carpenters, machinists, plumbers, painters, ship fitters, coppersmiths, blacksmiths and boiler makers to keep the ship in repair, and expert gun pointers and gunners' mates to man the guns. In order to get experienced men to fill its requirements, the navy maintains a number of schools or training stations where each recruit is educated.

The recruit is known as an apprentice seaman and on arrival at the training station is placed in charge of a petty officer. If he passes his medical examination, which is very rigorous, he is given an outfit of clothing for winter and summer, consisting of uniform, shoes, underwear, cap, sweater, overcoat, oil skins and rubber boots. A tailor is provided free of charge to make these clothes fit him with tailor-made exactness. Having received his outfit he is now ready for instruction. A petty officer teaches him how to fold neatly each article of wearing apparel. When he learns the trick of it he discovers a strange thing—that a well-folded and well-rolled garment is as neatly pressed as if it had been done by a tailor with a flat iron. He is taught how to stow his bag so that every article will be handy and well cared for. From the start he is taught that neatness of person and clothing are requirements that

the navy expects of every man. He is given a hammock and taught how to sling it, how to lash it neatly and how to handle it. His hammock is his bed and unlashng his hammock is making his bed for the night. All this takes place in well-heated and well-ventilated barracks. The dormitories on the upper floors are furnished with hammock hooks just as they are on board ship. When these early lessons are learned the recruit is taught to swim. There is a fine swimming pool at the station and petty officers are detailed to teach each apprentice seaman, with the aid of rope and tackle, to look out for himself in the water. It does not take long to make a good swimmer out of the average healthy boy. He is taught how to make knots, how to splice ropes, to make hitches and bow lines, to coil down gear and to make himself a handy man about the decks. In the summer time he is taught how to handle boats both under sail and under oars.

Having been assigned to a battalion other drills begin at once. He is instructed in the use of the semaphore (signalling with arms), is given the "wigwag" (signalling with flags); and is taught the use of lights, rockets and other night signals. He is given a rifle and is taught how to handle it and how to fire it. He is taught the manual of arms and target practice in a way that cannot fail to attract him. Many of the movements of the drills are timed to the music of well-known marches and two-steps played by the naval band. After four o'clock in the afternoon the time of the apprentice seaman is his own. This course of instruction lasts four months. At the end of that time the apprentice seaman is examined and if he qualifies he gets a rating and goes aboard a man of war with an advance in pay.

It is to the petty officer that the apprentice seaman must look for advice and counsel, as all the petty officers have been "through the mill" themselves. There is no swearing or rough language permitted on the part of these petty officers and a petty officer or any other officer who should raise his hand against, or strike a recruit, would be immediately courtmartialled and dismissed from the navy.

The discipline of a seaman's life is the best thing in the world for a boy. Reveille bugle call is sounded at 5:30 o'clock every morning when all hands are expected to turn out promptly, excepting men who have been on watch during the night. There is no such thing as taking an extra nap, as the decks must be cleared in fifteen minutes. Then follows early coffee or cocoa with bread and hard tack, if wanted, with smoking for half an hour. Then follows the washing of clothes, each man being

required to wash his own clothes. At 6:30 o'clock all hands commence to clean the ship. The crew is divided into divisions, and to each division is assigned a certain portion to clean. This cleaning is not arduous, as it must be completed in time for the men to wash and prepare themselves for breakfast at 7:30. Breakfast lasts from 7:30 to 8:15, during which time the men may smoke. At 8:30 the sick call is sounded and those who do not feel well must consult the medical officer of the ship. From 9:30 to 11:30 the time is devoted to drills with fifteen minute intermissions for rest. These drills consist of great gun drill, infantry and light artillery, boats under oar or sails, signals, collision and abandon ship, fire quarters, general quarters, clear ship for action and coal-ing ship. Not all of these drills are done each day. From 11:50 to 1 P. M. is noon hour with dinner and another smoke. At 1:30 afternoon drill commences, usually consisting of short talks on instruction in setting and firing small arms and great guns. This afternoon drill finishes about 3 P. M., after which the bluejacket's time is his own until the crew is assembled for the calisthenic drill which lasts about twenty minutes. This drill consists of certain movements of the arms, legs, and body, designed to develop and harden every muscle. Supper is served at 5:30 o'clock after which the men are free up to 9 o'clock, except at 7:30, when they are required to sling their hammocks. At 9 o'clock the bluejacket must retire unless there is a concert, minstrel show or some other function in progress.

As to emoluments and the opportunities for achieving independent fortune they are certainly superior to those on land. To begin with after four months at the training station the apprentice seaman is appointed an ordinary seaman on board ship with pay at \$19 per month. After one year as ordinary seaman he is advanced to seaman at \$24 per month. After reaching this position he is immediately eligible as third class petty officer with pay at \$30 per month. After one year as third class officer he is eligible to the grade of second class petty officer with pay at \$35 and \$40 per month. After a year as second class petty officer he is qualified to be promoted as first class petty officer with pay at \$45 or \$50 per month. After a year as first class petty officer he is in line for promotion to chief petty officer who, after serving one year creditably, is eligible to permanent assignment at \$70 per month. This permanent appointment is issued by the navy department and is irrevocable except by courtmartial. A chief petty officer who has been in the navy seven years is qualified to advance to the rank

of warrant officer at \$1,200 to \$2,100 per annum.

From warrant officer he may be promoted through the various ranks of commissioned officer, but it should be stated that commissioned officers are usually graduates of Annapolis and while many enlisted men have succeeded in becoming commissioned officers after diligent application, the department does not wish to convey the impression that an enlisted man can rise with ease from an apprentice seaman to commissioned rank. There are many chances of promotion, however, to the grades of petty and warrant officer. In fact a man is not compelled to wait until there is a petty officer vacancy on a ship. If he is qualified to be a petty officer he will be promoted and transferred to some other ship where there is a vacancy. It might be stated that there are always vacancies in the petty officer and warrant grades. Not since the Spanish war have all the offices in these grades been filled. No man can enter the navy and remain a seaman. No man can stay in the navy more than three years or, at the outside six years, without being promoted to petty officer. Of the 33,000 men in the navy over 9,000 of them are petty officers.

After twenty years' service a man of warman, if physically disqualified, may retire on one-half the pay and allowances he is receiving at the time he retires, and after thirty years' service he may retire on three-fourths of the pay and allowances he is receiving at the time he retires. It is not necessary that the service be continuous. Time served during a period of war is counted as double time. There is a government savings bank on each ship where the men may deposit their money and receive 4 per cent interest on it.

Consider, therefore, the financial advantages. A boy entering at eighteen reaches the rank of petty officer in four years, and chief petty officer in eight years. Anyone can reach this rank. Suppose he saves only half his pay and at the end of his thirtieth year wants to retire. He would then be only forty-eight years of age. He would have for the balance of his life a fixed pension of \$96.94 per month or \$1,163.28 per year. In addition to this there would be on deposit in his favor \$23,923 in the government savings bank, which he can readily invest at 4½ per cent to bring him an income of over \$1,000 per annum. He is thus assured for the balance of his days of a fixed income of over \$2,000 a year. And to do this he only needs to save one-half his pay during his period of service. Men in business may have dreams of greater success, but they are only dreams. The percentage of men who at the age of forty-eight have ac-

accumulated an income of \$2,000 per annum are very rare. That we all know to be true. Moreover a man o' warsman at forty-eight is practically as youthful as the ordinary factory hand at thirty. He has had the advantage of regular habits and the finest of open air life. He has far greater capacity for extracting pleasure out of his income of \$2,000 per annum at forty-eight than the factory hand at forty-eight has. Assuredly if these facts were generally known the navy department would not lack for apprentice seamen. If anyone desires any further information it will be supplied by the Bureau of Navigation, Department of Commerce and Labor, Navy Department, Washington, D. C., or by the nearest naval recruiting station.

STRIKE AT DULUTH.

The ore trimmers employed on the Mesabi docks at Duluth struck Monday for an advance of 25 cents a day in wages. The Duluth, Mesabi & Northern Railway Co., which operates the dock, has a contract with the men for the season and it is stated that it will not accede to the demand.

The dock is one of the largest on the lakes, handling ore which is mostly the product of the mines of the United States Steel Corporation, and the cessation of work there will mean much delay to the fleet. The Pittsburgh Steamship Co. has already ordered a large number of vessels to be placed in ordinary until the strike is adjusted. All the barges will be dropped immediately and some of the steamers will not be sent to Lake Superior again until the difficulty is settled.

All the boats of the other fleets are running but they will probably have difficulty in getting cargoes and will be forced to lie up after the present trip.

The shipments of ore for July will be considerably reduced by this strike. The open pit mines which ship from the Mesabi dock have ceased operating, no ore having been received in Duluth since Saturday night. On Wednesday the strike spread to Two Harbors, thus tying up two of the largest shipping docks and seriously delaying the fleet. Half of the mines on the Mesabi range are idle. President Coulby of the Pittsburgh Steamship Co., reached Duluth Thursday and will assist in arriving at a settlement of the difficulty. It is expected that the solution of it will be the employment of new men, as the workmen have clearly broken their year's contract in striking.

MARYLAND-TUSCARORA COLLISION.

The Lehigh Valley line steamer Tuscarora, bound for Milwaukee and Chicago with a full cargo of general package freight, was sent to the bottom of the St. Clair river as the result of a collision with the steamer Maryland, managed by Vance & Joys, Milwaukee, last Thursday. The collision occurred near the entrance to Lake Huron and the Tuscarora drifted down and rammed the Grand Trunk docks at Port Huron damaging them and also striking the steamer New York, which was loading there, injuring her bow somewhat.

The Maryland, which was bound for Buffalo with 132,000 bus. of corn lost her forward bulwarks and had a hole about 9 by 10 ft. stove in her bow extending down from the 14-ft. mark.

The Tuscarora when floated was found to have sustained heavy damages to her bow. Her cargo was removed by the steamer Mauch Chunk and she will be dry docked at Ecorse. The Maryland will probably be dry docked at Ecorse also.

The damages to both vessels were very serious but fortunately there was no loss of life.

IRON SITUATION.

The strike of ore laborers at the docks at Duluth and Two Harbors has brought a situation of serious possibilities before the iron and steel industry. If the trouble continues for any extended period and ties up the ore traffic from the mines to the furnaces, it is likely to put a severe check upon mill operations. The pig iron market remains dull, but firm. Heavy transactions in plates and shapes are noted in Chicago and inquiries are pending there for a considerable tonnage of structural steel for barges and packet steamers. Bar iron is not very active, but the steel bar business is satisfactory and probable railroad purchases are numerous. Plates are improving in deliveries and prices. Coke is in light demand and old material is dull.

LAKE IMPROVEMENTS AS AN INVESTMENT.

An additional item of interest is found in the report of Col. Charles

E. L. B. Davis, government engineer in charge of the waters connecting the great lakes, dealing with the ship canal. Col. Davis says:

"The large appropriations, going well into the millions, that have been made for the improvement of the main thoroughfare through the great lakes, commonly designated as the ship canal, which includes the improvements of the St. Mary's river, the St. Clair Flats and the Detroit river, impress the popular mind strongly, and the question is often asked if such expenditures of public moneys are warranted by the requirements of the situation."

Col. Davis answers the question by the presentation of the table carrying the freight values for the last 20 years. Continuing, he says:

"That is, for a period of 20 years—from 1887 to 1906—the valuation of the freight tonnage reaches the enormous total of over \$4,500,000,000, having already passed the half-billion mark per annum. Taking the ratio between the commerce passing through the Detroit river and the St. Mary's river and applying it to the valuations, the total through the latter for the same 20-year period amounts to \$5,611,234,000 in round numbers. For the same 20-year period the amounts expended totaled \$16,023,241.

"This total amounts to a little over two and eight-tenths of one per cent of the total freight values, which would seem to answer the question of whether the expenditure is justified."

TO LEAVE MANITOWOC.

The report that the Goodrich Transit Co. is to remove its plant from Manitowoc has been confirmed. The yard of the Manitowoc Dry Dock Co., which the Goodrich company has held under lease, must be vacated as the owners are to make extensions. There being no other site on the river it is believed that the Goodrich company will remove to Muskegon where it is said it has purchased docks for its accommodation.

The new Hoover & Mason ore machine at the Toledo Furnace Co.'s dock is now ready for work. This is the third machine installed at this dock.

DREDGING IN DETROIT RIVER.

Abstract of proposals for dredging Section 4, Plan B, Detroit river, received in response to advertisement dated June 3, 1907, and opened July 3, 1907.

No.	Name and address of bidder—	Estimated quantity 3,500,000 cu. yds. Per cubic yard.	Total.
1.	G. H. Breymann & Bros., Toledo, O.....	25½c	\$ 895,500
2.	Arthur H. Vogel, Milwaukee, Wis.....	26½c	927,500
3.	Detroit Dredging Co., Detroit, Mich.....	30 c	1,050,000
4.	Lake Erie Dredging Co., Buffalo, N. Y.....	30½c	1,067,500
5.	Buffalo Dredging Co., Buffalo, N. Y.....	32 c	1,120,000
6.	Great Lakes Dredge & Dock Co., Chicago, Ill.....	35 c	1,225,000

AT HEAD OF GREAT LAKES.

Duluth, July 15.—Another good week's work was experienced at the head of the lakes in the seven days just past and 1,129,413 tons were shipped from the three ports. The Missabe docks made their largest weekly shipment of the season and the Duluth & Iron Range docks at Two Harbors increased their output of a week ago by more than 80,000 tons. The docks at Allouez were seriously handicapped during the week by the severe wreck on the Great Northern, two ore trains colliding with a resulting loss of about 24 hours of traffic. With the exception of yesterday when there were a large number of boats at the dock the usual shortage was felt. The thing to be understood by this shortage is not so much that ore is not being shipped via Allouez as fast as it should be but that the tonnage handled does not represent what the Great Northern road and docks could do if necessary.

The records of the three docks for the past week and the corresponding week a year ago are, Duluth, 540,681 tons as against 385,311 tons; Two Harbors, 360,009 tons as against 327,074 tons, and Superior, 228,723 tons as compared with 181,310. This shows a gain of 225,718 tons in the week this year. At the present rate the July movement will easily equal that of June and a little bit more.

What has in it the possibilities of a severe check, however, developed this morning when the 750 ore trimmers at the Missabe docks on the day shift refused to start to work demanding an increase of 25 cents. The wage is now \$2.25 for the day shift and \$2.50 for the night shift and the demand is that both be increased. Early in the year an agreement was reached between the railroad and a committee supposed to represent the men, though they have no organization and the present scale was fixed upon. That action does not appear to have been binding on the men, but it is believed that the dissatisfaction is practically all with the day men and that the night men are content with the present arrangement. If it proves to be so the strike will probably be all over in a day or two. There are but eight boats at the dock today, all arriving yesterday, and they are being sent to Allouez, Two Harbors and Ashland.

The movement of wheat and flax braced up materially during the week, both in receipts and shipments. In wheat about 200,000 bushels more was moved in and out this week than last. The receipts of flax increased 70,000 bushels and the shipments nearly 450,000 bushels. The coarse grains had corresponding gains, though not in so

marked a degree. The figures for the week are as follows:

WEEK ENDING JULY 13.		
	Receipts.	Shipments.
Wheat	604,738	909,875
Corn	11,788
Oats	81,947	39,005
Rye	13,200	5,179
Barley	169,880	44,364
Flax	210,354	801,861

The rate fell off from 2½ to 2 cents.

Collector of Customs at this port L. M. Willcutts has had the unpleasant task of fining an unusual number of boats in the past two weeks. The fines for the most part were imposed upon steamers for violation of the speed limit in St. Mary's river and upon launches in the Duluth Harbor. The only explanation of the former is that steamers have probably been getting into the habit of going through the river at full speed and the Revenue Cutter service is just getting after them. The reports were all filed by the local officer Lieut. Johnson, for violations between Everens Point, the Dark Hole and Harwood Point. The steamers breaking the rules were the James C. Wallace, Capt. Ehrhart, upbound on June 27, the Augustus B. Wolvin, Capt. Craigie, upbound on June 28, the Northwest, Capt. Minar, downbound on June 27, and the Cambria, downbound July 1. All of these boats were cited as going over eleven miles an hour instead of under the speed limit of nine miles. The fine in each case was \$200. The captains' answers have not yet been filed.

On its previous trip up the James C. Wallace was fined \$200 for each of two offences. For passing the steamer D. O. Mills between Everens Point and the Dark Hole and for failure to blow the required 10-seconds blast when passing Everens Point. In replying Capt. Ehrhart said that coming up behind the Mills in the dark and thinking her loaded he blew the passing signal and was answered with permission to pass. This was below Everens Point, but having miscalculated the speed of the Mills, the Wallace did not get abreast of her till Everens Point was passed. He then stopped his engine but thinking it the better judgment to go ahead went by the Mills. He disclaimed any violation of the second offence. His fine was recommended reduced to \$50.00.

Five launches and the steamer Newsboy at Duluth were fined \$200 each for passing the U. S. customs launch Lurline without blowing passing signals. One of the launches had no whistle and bell. At present the regulations make no distinction between the largest steamers and the smallest launches, which is somewhat unfair to the small craft, especially in the matter of providing themselves with bells and whistles as the size and power of the boats scarcely permit of large bells and steam whistles. For

these reasons the fines will probably be made nominal. On the other hand the launches have been a source of considerable nuisance to the tugs and large craft in the harbor through violations of the rules. The fines imposed have had a very salutary effect.

The largest fine, one of \$1,000, was imposed on the steamer Frederick B. Wells for failure to report coming from a foreign port, before loading. The Wells arrived at Two Harbors at 4.00 p. m. Sunday afternoon July 7, having come through the Canadian Soo, but did not report until 8:30 Monday morning at which time it had already begun to load.

On their arrival at Duluth Saturday the steamers Earling and Phipps both of which went aground on their trips down were sent to the Superior shipyards. The Phipps was there but a few hours and has already left port with a cargo, though in departing she again went aground though but lightly, and was easily pulled off. The Earling will be in dock at least a week longer, as 27 bottom plates on her No. 1, 2, and 3 tanks were damaged.

The package freighter Duluth of the Western Transit Co. line, established an upbound record from Buffalo to Duluth on her last trip, coming up light and with fair weather. The Duluth left Buffalo on Thursday last, and made the run to Detroit in 16 hours and 20 minutes, from there to Port Huron in 5 hours, to Sault Ste. Marie in 18 hours, and to the Duluth pier in 25 hours and 20 minutes, making the total running time 64 hours and 40 minutes. The Duluth is sailed by Capt. S. R. Jones and Engineer Frank Miller.

The steamer D. R. Hanna, bound for the head of the lakes with coal, went aground on the east bank at the Limekilns on Friday, completely blocking the up-bound channel. A patrol was established requiring up-bound craft to wait until the west channel was clear of down-bound boats. After lightering 1,000 tons of her cargo the Hanna was released without apparent damage.

The new lake and rail tariff rates, taking in all points west of Cleveland and Detroit, and on shipments from the east, went into effect July 16. The lines affected are the Mutual Transit Co., Buffalo; Western Transit Co., Buffalo; Cleveland & Buffalo Trans. Co., Cleveland, and Detroit & Buffalo Steamboat Co., Detroit. The New York and Boston rate is reduced six cents, and the Philadelphia first-class rate likewise. The Albany, Rochester and Syracuse rates remain the same as under the old tariffs.

MARINE REVIEW COURSE FINDER.

A VOLUME THAT IS NEW AND ORIGINAL, NOT TO BE COMPARED WITH ANYTHING NOW ON THE MARKET. A BOOK THAT IS OF PRACTICAL NEED, CAN BE USED ON EVERY BOAT AND AT EVERY HOUR OF THE DAY. CONTAINS NO DRY NURSING LIKE OTHER PUBLICATIONS WITH SIMILAR TITLES. NO OTHER WORK CAN TAKE ITS PLACE. IT IS THE ONLY WORK OF ITS KIND. NO MASTER, MATE OR SAILOR SHOULD BE WITHOUT IT. IT WILL SAVE YOU MUCH ANXIETY AND RELIEVE YOU OF MUCH RESPONSIBILITY. IT MIGHT BE THE MEANS OF KEEPING YOUR BOAT OFF THE ROCKS AND THE SAVING OF DRY DOCK BILLS. IT IS EASILY UNDERSTOOD AND THOROUGHLY PRACTICAL. IS CORRECT BOTH THEORETICALLY AND PRACTICALLY. BY CLARENCE E. LONG. PRICE, \$2.50.

The MARINE REVIEW COURSE FINDER is a book that should interest every master, mate and sailor on the Great Lakes. It should be particularly interesting on account of its great practical utility and the simple manner in which it can be used. It will be found to be the greatest help and aid to any man who is in command, or on whom the shaping and setting of courses devolves. It answers the same purpose on the small boat as on the large boat. In fact, it applies wherever lake navigation is applicable.

The book contains all the Correct Magnetic Bearings of the lighted and unlighted river and harbor ranges and all the Mean Correct Magnetic Courses on the chain of lakes, with an explanation of a simple method of making or finding the course to be steered between any two points on the lakes, no matter where they are.

No matter what the course to any certain place may be by your compass the course finder will tell you what it is. No figures are required in the method, not even so much as a mental calculation being necessary. The course finder allows the variation and deviation for you so that it is not even necessary to know the first thing about the laws of variation and deviation. It will be found just as necessary and convenient for the man who does understand all about compass corrections. It is a method that should be employed as a check in all azimuth work. It was designed as a makeshift for azimuths for when it is cloudy azimuths of heavenly bodies are not available. So long as the sky is not overcast azimuths supply one of the most important needs of lake navigation; but when it is cloudy and for several days at a time, as it often is, the navigator is up against a stiff proposition for making his courses. This is especially so when the deviations change with different trims of the boat. In

cases of this kind the course finder will be found of the greatest assistance. The course finder will be found useful at all times, no matter what the conditions of the weather may be.

It has often been said by lake navigators that if the correct magnetic bearings of all the lighted ranges on the lakes were given it would be of the greatest assistance to the lake master for finding his compass deviations. The course finder has done this and a great deal more. No other work on the market will be found more useful to the lake master than the work to be performed by the course finder.

One of the greatest difficulties the lake navigator has in the use of his compass is the change in the deviation due to a change in the trim of his boat, such as being light, loaded, half loaded, etc. When azimuths are available the navigator can make them answer his purpose, but when they are not he must employ other means. It is the purpose of this work to take the place of azimuths when the sky is overcast.

A few practical examples will better illustrate the system:

To make good or find the compass course to be steered between Eagle Harbor and Ashland, having previously noted course by the same compass when heading on Pt. aux Pins range, merely port $\frac{3}{8}$ -pt. from the course shown when on this range. Supposing that your compass read SW $\frac{1}{2}$ W when heading on Pt. aux Pins; SW x W $\frac{1}{8}$ W then would be the course to steer by this compass from Eagle Harbor to Ashland, because porting $\frac{3}{8}$ -pt. from SW $\frac{1}{2}$ W makes SW x W $\frac{1}{8}$ W.

Devils Island to Superior, port $\frac{1}{4}$ -pt. from the compass course shown when heading on Pt. aux Pins range.

Nine Mile Pt. to Presque Isle, starboard $\frac{1}{8}$ -pt. from the course shown when in range with Chicago pierhead and Four Mile Waterworks Crib.

Chicago to Pt. Betsey, port $\frac{3}{8}$ -pt. from the course shown when in range with Chicago pierhead and Chicago Waterworks Crib.

Niagara Bar to South Bay Pt. (Lake Ontario), port $\frac{1}{4}$ -pt. from the course shown when heading on St. Mary's River Lower range, or steer same course as shown when heading on Vidal Shoal range.

SE. Shoal lightship to Cleveland, starboard $\frac{1}{8}$ -pt. from the course shown when heading on St. Mary's River upper range.

Another feature of the work is the blank forms for tabulating the deviation of the compass on all the river ranges. This form indicates just how a compass should read when heading on that particular range, so that the difference between what the compass says and the

correct magnetic bearing of the range is the deviation. In this method there is no chance of confusing the variation with the deviation. In conjunction with this there is a deviation curve card for obtaining the deviation on those points of the compass for which there are no ranges. The practical utility of this card is that the greatest amount of the work has been done so that the navigator can obtain the deviation for any point or quarter point of the compass so desired, in a moment's notice. The entire method is so simple that any one must be able to understand it. The tabular forms and deviation curve blank are not essentials to the system, but they have been supplied, so that in the event of a master wishing to determine his own deviation and allowing it to his corrected course he has a ready means of doing so. The system recommends itself to favor more on account of its practical utility and simplicity than anything else. No great claim is made for the originality of the system, for it has and is being practiced every day, but it is the ease and convenience that the navigator can handle this part of his work that merits consideration if not commendation.

Practical men to whom the nature of the work has been explained and to those who had an opportunity of looking over the typewritten copy for the book, became very enthusiastic and urged its printing at the earliest possible moment. Several ship masters were so eager for a copy of the work that they offered the publishers \$25 for the privilege of having a copy typewritten from the original copy.

The book also contains a number of chartlets showing the correct magnetic bearings of all the ranges of the principal lake ports. Their positions are accurately drawn and each range marked and at the same time showing just how your compass should read with your boat's head on that particular range. These harbor charts were added to the work so that there would be no possible confusion in getting the range desired. This work will also be found useful in compass adjustment, since it shows at a glance just what ranges at the different places are most available for the purpose. There are many other things for which the work will be found useful.

QUESTIONS FOR WHEELSMEN AND WATCHMEN.

NINTH INSTALLMENT.

97. What does three short blasts of the steam whistle indicate?

98. What does three blasts of a fog horn on a sailing vessel indicate?

99. What signal should a vessel blow when making a bend where she cannot see over it?

100. What signal should a vessel give when leaving a dock?

101. What is an alarm signal?

102. What is it used for?

103. If one steamer is approaching another from astern and desires to pass on her port side, what signal shall she make?

102. What signal shall the one ahead make?

103. Supposing the one ahead does not want the one astern to pass, what signal does she give?

104. Supposing the steamer astern desires to pass the steamer ahead on the starboard side, what signal must the one astern make?

105. With a straight gear, which way will a ship's head go when the steering wheel is rolled to port?

106. With a cross gear, which way will a ship's head go when the steering wheel is rolled to starboard?

ANSWERS TO QUESTIONS FOR WHEELSMEN AND WATCH- MEN.

SIXTH INSTALLMENT. PUBLISHED JUNE 27.

61. The right of way is the law permitting one class of vessel the privilege of holding a course while the other class has to give way. That is, one of the two vessels maintains her course and the other keeps out of her way in order that both go clear.

62. Any vessel that is propelled by machinery.

63. Yes.

64. A sailing vessel is a craft wholly propelled by sail.

65. Is a vessel that has no power of her own and is dependent upon a steamer for her movements.

66. A tow barge carries a small white light aft in addition to the colored lights while a sailing vessel does not. This small light warns other vessels coming up on her from astern of her existence. Under the same conditions a sailing vessel would have to show a lighted torch to warn others of her presence.

67. The left hand side looking forward.

68. Your left side is the starboard side and your right side the port side.

69. The side on which the wind blows. Same as the windward side.

70. It can be either, being dependent on which of these sides is to the wind and weather.

71. Because they can be propelled in any direction, against as well as with the wind, whereas a sailing vessel can go only in certain directions, being governed by the direction of the wind.

72. A vessel is underway when she is not at anchor, tied to a wharf or stationary object.

SAIL VESSELS MEETING OR CROSSING.

It is the duty of the vessel required to give way to take all necessary precautions in time to avoid the collision, to apprehend the necessity of the privileged vessel to go about at the end of her tack, or to avoid other vessels. She must also make due allowance for changes of course due to ordinary but not excessive leeway and yawing, nor should she come so close upon the other vessel as to create apprehension of a collision, and alarm her into a change of course to escape it. The rule that the vessel required to keep out of the way shall, if the circumstances of the case admit, avoid crossing ahead of the other, it seems is not imperative, and the vessel required to keep out of the way may do so in any way she sees fit. A vessel bound to give way which keeps her course in pursuance of a hail from the other is not in fault for doing so.

There is a duty on the part of the privileged vessel to hold her course, to beat out her tack, and to do nothing to mislead or baffle the movements of the other vessel. The vessel required to give way is entitled to presume that the privileged vessel will be navigated in accordance with the rules, and the privileged vessel is entitled to presume that the other will take the necessary steps to avoid her. The luffing of a close-hauled vessel so as to bring her head to the wind as close as it will lie and not lose her headway is not a change of course, nor is the yawing half a point of a vessel due to a change of course. But it has been held that luffing two and a half points is not justifiable. Nor is a vessel justified in following the variations of the wind.

A privileged vessel is not required to hold her course under all circumstances. If a change of course is made in ample time to enable the other vessel to avoid her, it is not a fault which will render her liable. But in considering what is ample time all circumstances must be taken into consideration. Where a vessel beating under shortened canvas in a strong wind, on coming about on the starboard tack lost all headway and swung around eighteen points but still persisted in holding to her tack as against a vessel close-hauled on the port tack, which took proper measures to avoid her, presuming she intended to come to anchor, she was held solely liable for the collision. So, also, the privileged vessel is justified in coming about to avoid a supposed danger at night. Where both vessels

being close-hauled on the starboard tack at night, the one to leeward but ahead of the other came about to avoid a supposed field of ice and just as she filled away was run into by the other, which had ample time to avoid the collision, it was held that the latter was liable.

A vessel is not in fault for changing her course where she could not under the circumstances, with reasonable care, have known that the other ship was the one obliged to give way. But such excuse cannot be invoked where, by reason of the inefficiency of her lookout, she failed to discover the approaching vessel until the two were in close proximity, and she had no time to discover the situation. The circumstances may be such as to impose upon the privileged vessel the duty of changing her course to avoid the collision, as where it is apparent that the other vessel is not easily controlled or managed under the circumstances, or where, being crowded by a vessel which should give way, she persists in her course when she could easily bear away, or luff, or come about and avoid an impending collision; though so long as the movements required to give way are in doubt, the privileged vessel is justified in holding her course.

FUTURE OF WOODEN SCHOONERS.

H. M. Bean, the veteran ship builder of Camden, Me., whose experience both as an owner and builder of wooden sailing ships is very extensive, is a firm believer in the future of this class of tonnage. He expresses the opinion that as large cargo carriers sailing vessels will in the future take precedence over steamers. Mr. Bean is the builder of the first six-master ever launched and is part owner of the only seven-master in the world, the Thomas W. Lawson, which has recently been chartered as an oil carrier between Texas ports and Philadelphia for a period of five years. In favor of the larger vessels Mr. Bean argues that it takes a crew much smaller in proportion to operate a 5,000-ton schooner than it does to handle one of the smaller tonnage. Mr. Bean asserts that so far as the actual handling goes the larger type is as easy to maneuver as the smaller and that there is practically no reason why the 5,000-ton schooner should not be the ship of the future. In the opinion of Mr. Bean the size of vessels will be limited only by the size of the docks and, when these grow through an increasing demand the ships will grow with them.

FOUR LAKE LAUNCHES.

The steamer W. M. Mills, building for the Western Transit Co., of North Tonawanda, N. Y., was launched from the Lorain yard of the American Ship Building Co. on Wednesday of this week in the presence of thousands and was christened by Miss Elizabeth Mills, daughter of the man in whose honor it is named. The launching was successful in every way, the Mills taking the water on an even keel. The Mills is the last of the trio ordered by the Western Transit Co. to go into the water. She is 605 ft. over all, 585 ft. keel, 60 ft. beam and 32 ft. deep, having thirty-six hatches, spaced 12 ft. centers. Her engines are triple-expansion with cylinders 22½, 37½ and 65 in. diameter by 42 in. stroke, supplied with steam from two Scotch boilers 15 ft. 4½ in. by 11 ft. 6 in., equipped with Ellis & Eaves draft and allowed 200 lbs. pressure. Her auxiliaries are quite complete, the electrical equipment being by the General Electric Co., the cabin flooring by the Sawdole Co., of Cleveland, and the emergency steam steerer by the Aker's Steering Gear Co., of Chicago. These three ships, the L. S. DeGraff, the William B. Kerr and the W. M. Mills are quite important types and will be completely described in the August Engineers' issue of the MARINE REVIEW.

The launching party were taken to Lorain in special cars and immediately after the launching repaired to the Clifton club where luncheon was served. Mr. Robert Logan, general manager of the American Ship Building Co. did the honors, introducing Mr. Harvey H. Brown, of Buffalo, as toastmaster. Speaking for the temporary exiles from Tonawanda, Mr. Brown said:

"Niagara falls, but Tonawanda flourishes."

It took the audience a fraction of a second to get the point. Mr. Brown continued that the conjunction of Tonawanda and W. M. Mills had worked wonders for both. He intimated that Mr. Mills had further plans of vessel building by referring to the steamer as being the last for the present season. Tonawanda he regarded as one of the natural assembling points for the manufacture of iron and steel and predicted for it a fine industrial future.

Brief speeches were made by W. M. Mills, Robert Logan, Capt. J. J. H. Brown, Frederick Robertson and W. B. Kerr, the luncheon being brought to a close by a standing toast to the ship.

Among those present were: Mr. and Mrs. Louis Lautenschlager, Mr. and

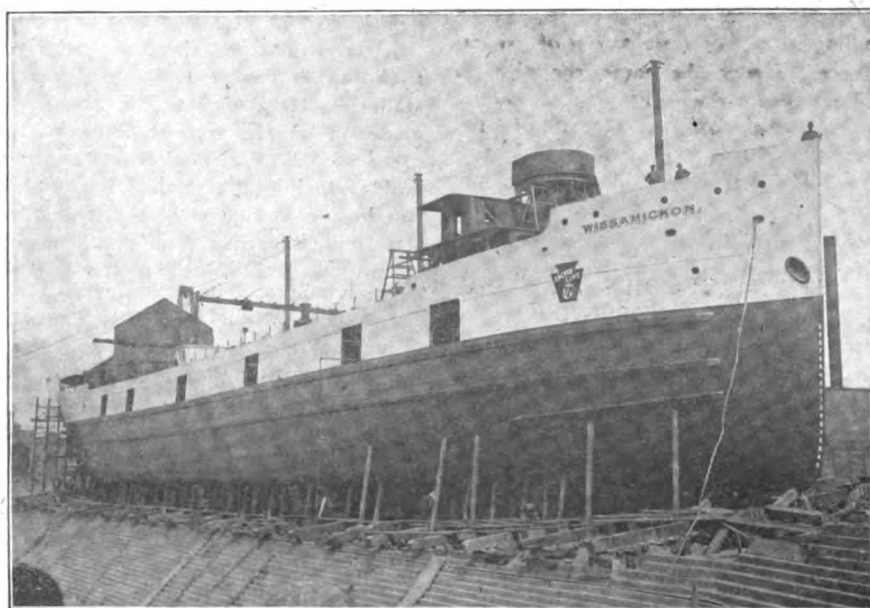
Mrs. J. J. H. Brown, H. L. Brown, W. T. Shepard and Miss Shepard, Miss Hubbell, Miss Fletcher, J. G. Munroe, John Perew, Oscar Cramer, E. T. Hitchcock, Augusta Gilmore, of Buffalo, N. Y.; R. A. Zaring, W. B. Kerr, Frederick Robertson, Mr. and Mrs. John Mahar, W. M. Mills, Mr. and Mrs. H. P. Smith, H. J. Knapp, John Cramer, Mr. and Mrs. James O'Connor, Mr. and Mrs. W. G. Palmer, B. L. Rand, Mr. and Mrs. John Shartle, Mrs. J. Edwards, F. A. McCoy, Mrs. J. E. Gilmore, J. Ryan, Mr. and Mrs. J. P. McKenzie, Mr. and Mrs. John R. Hessen and Miss Hesson, of North Tonawanda, N. Y.; Mr. and Mrs. W. K. Mills of Chillicothe, O.; John Kelley, W. C. Richardson, J. Cole, Frank Brown, Mr. and Mrs. Robert Logan, Mr. and Mrs. James Naley, Mr. and Mrs. Alexander Hynd, of Cleveland, O.; E. H. Cottrell, of Mt. Clemens, Mich.; John H. Walsh, of Detroit, Mich.; Mr. Spear and John C. Chapman.

The package freighter Wissahickon, building for the Anchor line, was launched from the yard of the Buffalo Dry Dock Co. on Thursday last with appropriate ceremony. The freighter was christened by Miss Amy Payne, daughter of John E. Payne, of Philadelphia, the president of the Erie & Western Transit Co. The Wissahickon is one of the finest package freighters on the lakes and is equipped throughout with every modern convenience. She is 372 ft. over all, 350 ft. keel, 46 ft. beam and 30 ft. deep, having ten hatches spaced 24 ft. centers. Her engines are quadruple-expansion with cylinders 19, 27, 40 and 58 in. cylinder diameters by 42 in. stroke, supplied with steam from three

Scotch boilers, 11 ft. 6 in. diameter by 11½ ft. long, equipped with Howden forced draft and allowed 210 lbs. pressure. The Wissahickon will carry 5,000 tons. Edward Smith, president of the Buffalo Dry Dock Co., was complimented upon the successful launching and the generally excellent appearance of the Wissahickon. The launching was witnessed by John E. Payne, president of the Erie & Western Transit Co.; Mrs. Payne and Miss Florence Payne, of Philadelphia; Mr. and Mrs. John Zimmerman, of Philadelphia; E. T. Evans, J. C. Evans, Capt. J. J. H. Brown, Charles J. Fox, B. C. Jones, E. H. Chase and Charles E. Markham, all of Buffalo, and Harvey D. Goulder, of Cleveland. The Wissahickon will be sailed by Capt. Charles Christy.

The bulk freighter Milinokett, building for Howard L. Shaw and James E. Davidson, of Bay City, was launched from the Ecorse yard of the Great Lakes Engineering Works on Thursday last and was christened by Miss Teresa Marie Dunbar, of Bay City. The Milinokett is 524 ft. over all, 504 ft. keel, 54 ft. beam and 30 ft. deep, having thirty hatches spaced 4 ft. centers. Her engines are triple-expansion having cylinders 23, 37 and 63 in. diameters by 42 in. stroke, supplied with steam from two Scotch boilers, 15 ft. by 12 ft., allowed 175 lbs. pressure. The Milinokett will carry 9,000 gross tons.

The Michigan Bankers Association were meeting in Detroit and the ship building company chartered the steamer Pleasure in order to give the visiting members an opportunity to witness a lake launching. The Pleasure



PACKAGE FREIGHTER WISSAHICKON ON THE STOCKS.

was anchored just outside the launching slip from which point of vantage an admirable view could be obtained. The event was successful in every way. At the conclusion of the launch luncheon was served to the launching party at the Detroit club, President Antonio C. Pessano acting as toastmaster. Among those present were: Mr. and Mrs. J. E. Davidson, Mr. and Mrs. H. L. Shaw, Mr. and Mrs. S. P. Cranage, Mr. and Mrs. J. J. Groas, Mr. and Mrs. J. C. McCabe, Mr. and Mrs. Frank J. Buckley, C. A. Eddy, C. N. Smith, J. B. Smalley, W. P. Loring, J. R. Watrous and Mrs. James Davidson, of Bay City; Mr. and Mrs. Walter S. Harsha and Miss Bachman, of Detroit; Philetus W. Gates, of Chicago, and R. B. Wallace and H. N. Herriman, of Cleveland.

The Milinokett will be sailed by Capt. A. J. Mahon, now in the steamer Penobscot, who will take with him his chief engineer, Edward H. Hoffman.

The steamer Hemlock, building for the Lackawanna Steamship Co., of Buffalo, at the yard of the American Ship Building Co. at Bay City, was successfully launched on Saturday. The vessel was christened by Miss Emma Arnold, daughter of the chief engineer of the fleet. The Hemlock, though not as large as some of the boats built lately, is constructed on extremely graceful lines and is a fine piece of work. The Hemlock has been chartered by her owners to Pickands, Mather & Co., of Cleveland. She will be commanded by Capt. John McNeill, of Cleveland, and P. F. Tonniff, also of Cleveland, will be her chief engineer. The dimensions of the vessel are as follows: Length over all, 440 ft.; keel, 420 ft.; beam, 52 ft. and depth of hold, 28 ft. Her engines are triple-expansion, 22 x 35 x 58, with 42 in. stroke. The boat has been fitted with every convenience, including electric apparatus for sounding her whistles. She will go into commission Aug. 3.

STEAM VESSELS MEETING OR CROSSING.

Where two steam vessels are meeting end on, or nearly end on, so as to involve risk of collision, the rules require that each shall alter her course to starboard, so that each may pass on the port side of the other. The maneuver must be made in due season, and both must port their helms, although collision would be avoided by one porting. Vessels are meeting end on when by day each vessel sees the masts or the line of the keel of the other in line, or

nearly in line with its own, and by night when they are in such a position that each sees both the side lights of the other. Vessels are not meeting end on when the red is opposed to the red, or the green to the green, or when, being on parallel courses, the vessels would pass clear if each kept her course. The rule is then inapplicable, for it might tend to promote rather than to avoid collisions. In case starboarding or porting, as the case may be, out of abundant caution, is not a fault. Where vessels are on parallel but not meeting courses, one vessel has no right to cross the bows of the other, and the vessel which insists on the port helm rule in such case assumes the risk of the maneuver. But if it is not clearly apparent that the vessels would pass clear, the rule applies, for the law does not leave the case to the uncertainty of a speculation upon chances. The rule requiring vessels meeting end on to pass port to port does not preclude them from passing starboard to starboard if the movement for such purpose is seasonably commenced.

When two vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side must keep out of the way. This rule is equally applicable to river and harbor navigation. Vessels are approaching on crossing courses when not meeting end on, or nearly end on, or on parallel courses as defined in the preceding section, or are not in the position of overtaking vessels, and the rule applies where the vessel approaching on the starboard side would not actually cross, but would strike the other amidships. Thus, where the courses of two vessels of different speed going in the same general direction converge so that each has the other bearing forward of the beam, they are on crossing courses. Vessels are not on crossing courses after one has crossed the track of the other. Two steamers going in the same general direction on the same route cannot be considered on crossing courses where the faster boat attempts to cross the bows of the other while rounding a point in the channel.

The cases are conflicting whether vessels approaching on nearly opposite courses within a point or two of meeting are to be considered as meeting end on or are on crossing courses. A similar conflict is found in the case of steamers going in the same general direction on converging courses, where the question is whether the vessels are to be considered on crossing courses, or whether the rule as to overtaking vessels applies. But this question seems now to be settled by the rule defining an overtaking vessel as one coming up with another more than two points

abait her beam, that is, aft of the range of her colored lights, and this was the rule previously adopted by a large number of cases.

(TO BE CONTINUED.)

THE KEARSARGE AND KENTUCKY USELESS.

The reports appearing in the public prints recently, beginning with an article published in *The Navy*, of Washington, attacking the utility of the battleships Kearsarge and Kentucky as fighting machines has called forth a statement from Rear Admiral Brownson, now acting head of the navy department.

The Navy's editorial stated that some of the guns of the two battleships were unprotected and also that their armor belts were badly placed.

Rear Admiral Brownson's statement is as follows:

"That there were defects in the Oregon class and the Kentucky and Kearsarge is well known; in fact, these defects were discovered before the completion of those ships, but the wonder is that there were so few defects, considering that they were the first heavy battleships built in this country.

"Compared with the battleships of other nations designed and built at the same time, the Oregon class was conspicuously superior; in fact, that class was referred to by the leading British technical papers at the time as the 'peerless' battleship, and the interior arrangement and other points were of special excellence.

"It is true that their armor was badly placed, but that arose from the addition to the ships of a great amount of material, stores and machinery not included in the original design. It is also true that they lack balanced turrets, but when they were built there were no such turrets in any navy. Their eight-inch ammunition tubes also were not sufficiently protected.

"As to the criticism directed at the large size of the ports in the turrets, this has been corrected in later designs by bringing the trunnions of the guns nearer to the front of the turrets, so that battleships of later design are free from this defect.

"As gun platforms, which is the main purpose of the ship, the Oregon class has no superior, and even at this late date they would give a good account of themselves in action. In fact, taking everything into consideration, it is only surprising that we built as good ships at that time.

"I am of the opinion that if the whole situation could be known, it would be seen that other nations have had, and are still having, their troubles in their shipbuilding programmes."

LAUNCHING OF THE COLLIER EVERETT

On Thursday last the collier Everett, building for the New England Coal & Coke Co., of Boston, was launched from the yard of the Fore River Ship Building Co., Quincy, Mass. The

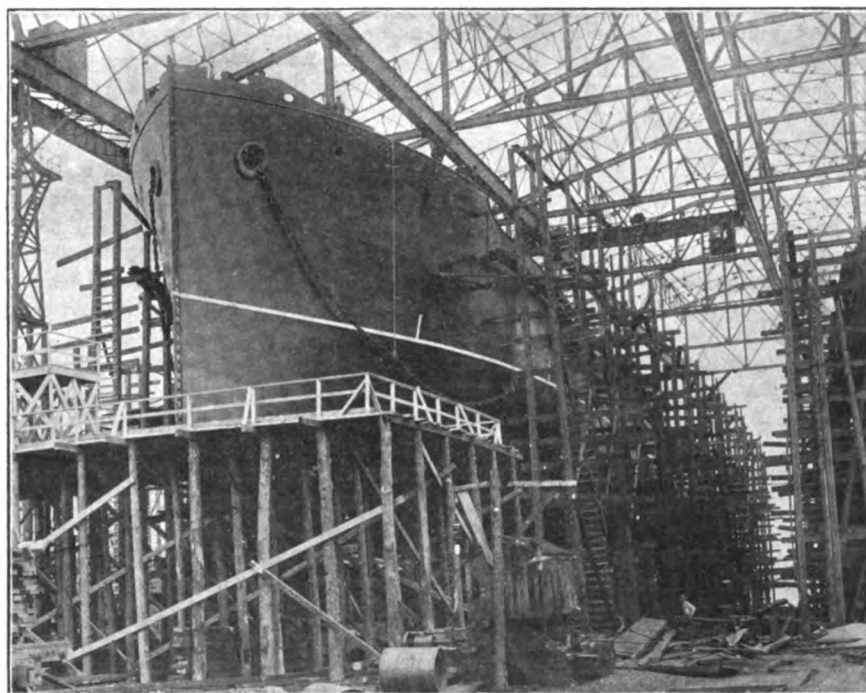
triangular prism formed by this line with the topsides on the spar deck being cut off and utilized as topside ballast tanks to be filled with water when the vessel is running light. In

after peak tanks. The great capacity for water ballast thus provided will insure a good immersion of the vessel when in the light condition, thereby providing greater stability and guarding against emersion of the propeller in this condition. This system of construction is a special feature of these vessels, and the structural arrangements incorporated are novel in ship construction.

The vessel will be rigged with three pole masts, and the machinery will be located right aft.

The vessel's hull will be built right up to a long poop deck aft, which will enclose the engine and boiler casings, reserve coal bunker, and accommodations for firemen, seamen, oilers and their wash places. On top of this deck there has been constructed a steel Liverpool house, in which have been arranged commodious staterooms for the berthing of chief engineer and his assistants, together with mess rooms, bathrooms, and toilet arrangements.

The bridge deck with sides of ship built up supporting same, has been constructed well forward of the half length. In this enclosure there has been provided the officers' accommodations, dining room, bathrooms, spare stateroom, pantry, store room, etc. On top of this deck a steel chart



BOW VIEW OF THE EVERETT ON THE STOCKS.

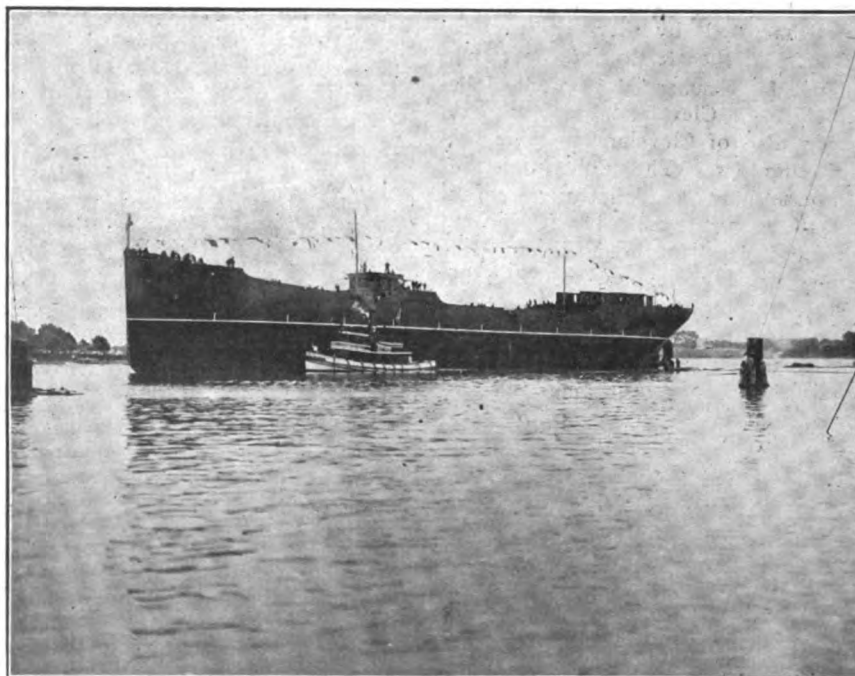
launching was of more than usual importance and was attended by over 300 invited guests. Miss Marion J. Boynton, daughter of Mayor Thomas J. Boynton of Everett, was sponsor. She was escorted to the launching platform by President F. T. Bowles and performed her part of the ceremony well. The maids of honor were Miss Gertrude Woolner, Miss Helen F. Noon, Miss Jessie E. Henderson, Miss F. G. Everest, all of Everett, and Miss Laura Cowles of Braintree.

The steamship Everett is the first of three similar vessels designed and being constructed by the Fore River Ship Building Co. for the New England Coal & Coke Co., of Boston. The vessel is intended for the coal trade between this port and the south, and is of the following dimensions:

Length over all, 400 ft.; breadth, extreme, 53 ft.; depth, 32 ft. 6 in.; gross tonnage, about 5,340.

The Everett is a single screw steamship of the single deck type with long poop, bridge and forecastle, and constructed on what is known as the self-trimming system. This consists in sloping the hatchways from their side coamings to the side of the ship having an angle of about 45 degrees, the

addition to these ballast tanks a deep inner bottom will be provided right fore



THE EVERETT IMMEDIATELY AFTER LAUNCHING.

and aft for the carriage of water ballast in addition to the usual fore and

house has been arranged with access stairway from spar deck to this house.

In addition to the chart house, at the forward end commodious quarters have been provided for the captain with bathroom, etc., adjoining.

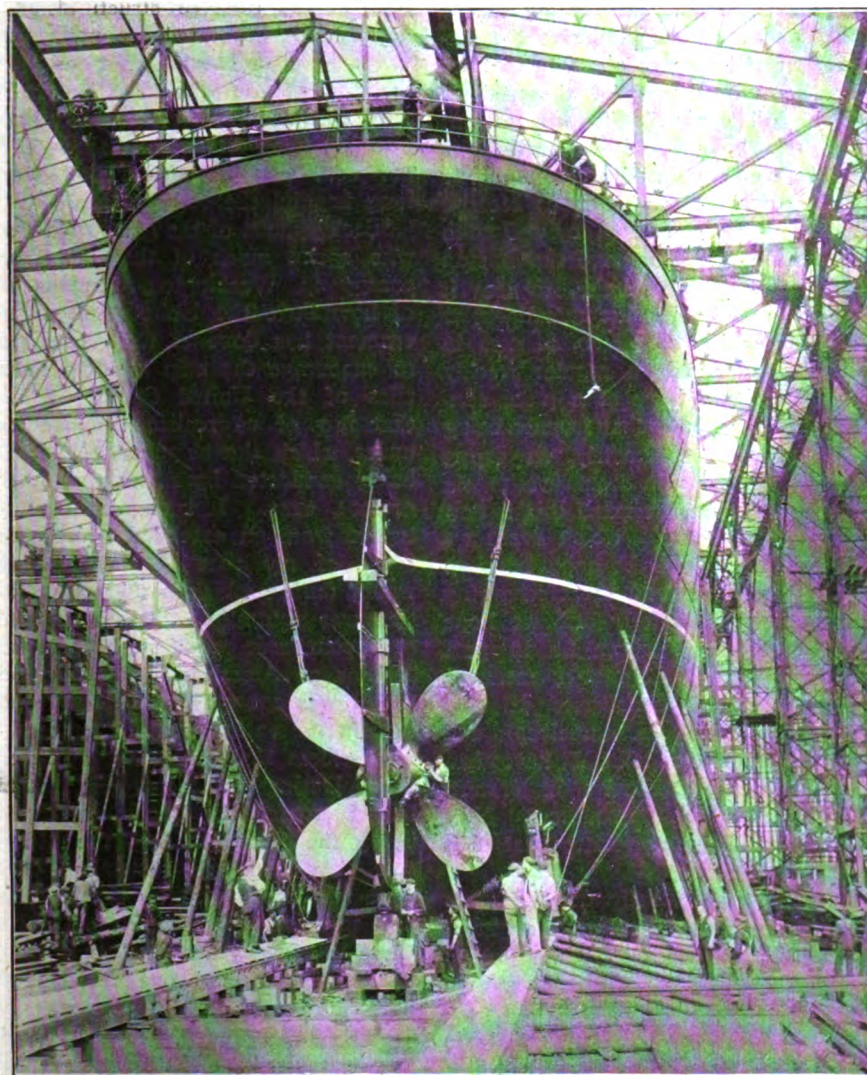
The pilot house which is a specially handsome structure strongly built of teak and finished bright, is arranged overhead with navigating bridge in front of same, and above this with access therefrom, a flying bridge with

hatch covers are of steel and of special construction to insure absolute watertightness and quick handling of the covers in opening and closing. These cargo holds provide for the stowage of 7,200 tons of coal in addition to the bunker coal carried for steaming purposes. Arrangements have been made at the loading terminal for filling the vessel in about

sure of 180 lbs. per square inch. In addition to these boilers, a donkey boiler is carried for auxiliary purposes. It is anticipated that this machinery installation will insure a continuous sea speed of 11 knots when fully loaded, making this class of vessel the swiftest as they are probably the largest of their class afloat. It may be said that the Everett and her sisters have been specially strongly constructed to withstand the hard trade in which they will be engaged. The scantlings are in excess of the United States standard Register requirements, to whose survey they have been specially constructed with a view to obtaining the highest class which this society awards. It need hardly be said that in first class vessels of this description special attention has been given to the berthing and messing of officers and crew, these being specially commodious, well lit, furnished and ventilated so that although engaged in the coal trade the complement will be berthed in as comfortable a manner as that obtaining in ordinary passenger vessels. Altogether the Everett is a distinct advance on anything of her class hitherto built, and should with her consorts effect a revolution in the coal-carrying trade of the Atlantic seaboard.

Immediately after the launching luncheon was served in the mold loft. President Bowles acted as toastmaster. Speeches were made by Hon. Thomas J. Boynton, of Everett; Congressman Samuel L. Powers, Congressman John W. Weeks and James L. Richards, president of the New England Coal & Coke Co. Mr. Richards' speech was of especial importance. He outlined the plans of his company, spoke of the necessity of a standard type of bulk freighter on the coast and made an earnest plea for the rehabilitation of the merchant marine. He said:

"Interests with which I am connected use a large quantity of coal, consuming at their Everett plant alone 600,000 tons per year, and the question of coal supply for that plant principally came up for consideration about 18 months ago, as the then existing contract for coal was to expire soon after that date. On investigation, it seemed to us that, while the price of coal at the mine was reasonably low, the price of transportation of the product from the mine to New England was extremely high, either by rail, or rail and water. We believed that the system of water transportation particularly was far from being up-to-date. As most of you probably know, coal that is brought by rail from



STERN VIEW OF COLLIER EVERETT SHOWING PROPELLER

electric projector, standard compass and steering station has been provided.

The forward part of vessel has been carried up forming a top gallant fore-castle about 36 ft. long, on which has been installed a powerful steam windlass of the latest type operating stockless anchors.

The Everett has been sub-divided by transverse watertight bulkheads into five large cargo holds, each about 48 ft. in length specially constructed for the stowage of coal or mineral cargoes, each hold being operated through two cargo hatches 28 ft. in breadth by 14 ft. in length. The

five hours and discharging in Boston by means of grabs in little over double this time.

The Everett has a machinery installation consisting of a set of triple-expansion surface condensing engines having cylinders 28, 44 and 73 in. in diameters with a common stroke of 48 in., all of which are fitted with piston valves. Steam is provided by four single ended Scotch boilers 14 ft. 2½ in. mean diameter and 8 ft. 10 in. in length, each boiler being provided with corrugated furnaces of the latest pattern Morison suspension type, constructed for a working pres-

the mine to tide water at shipping point is transported to this section in various types of boats, varying in tonnage from a small schooner to craft carrying five or six thousand tons, and each schooner, barge or steamer varying in type of construction, some having two, some three, some four, some five and some six hatches of different size, etc., so that the terminals, either at the loading or discharging point, are not able to work to as good advantage as they could if they were loading or unloading ships of practically the same type of construction. As you, who have to do with the shipping of coal, know, the delays caused on account of loading and discharging are a serious loss, on account of demurrages that someone has to pay, either directly or indirectly. It, therefore occurred to us if we had ships of a special type of construction, with a number of large hatches, they could be loaded and unloaded much quicker than the average boat today and could carry coal at a much less price than the present one. We then investigated as to the type of boat for water transportation which could be used to the best advantage, whether it should be large barges, towed by ocean tugs, or schooners, or steam colliers, carrying a large cargo themselves and also towing barges. We finally concluded that, taking everything into consideration, the most economical method of transportation would be by steel, steam collier carrying about 7,000 tons in addition to coal for its own requirements. When we first took up this coal question, we had no idea of doing anything except for our own requirement, but the more we examined the situation the more fully were we convinced that we could transport coal to the mutual advantage of the various manufacturing industries in New England and ourselves. We, therefore, decided to build three steam colliers, each about 400 ft. long, drawing 24 ft. of water, and to carry 7,200 tons of coal. This fleet will bring into Boston about 1,500,000 tons of coal per year, which is about one-half of the total amount of soft coal brought in last year from United States ports.

"The total tonnage, per net register of these ships for Boston, will exceed that of any other line now entering that port. The tonnage, per net register of ships of the largest lines now entering the port for the calendar year of 1906 was as follows:

Wilson Line	67,053
Allan Line	111,911
Warren Line	140,070
Red Star Line	140,420

Wisons & Furness-Leyland...	148,636
Hamburg-American	195,849
Cunard Line	346,060
Leyland Line	420,552
White Star Line	540,752

"The total, per net register of the ships, that the Fore River Ship Building Co. are now constructing for us will be 586,698 tons.

"In connection with the transporting of coal by these boats, I might say that we have excellent facilities at Everett for the discharging of the ships, and are now adding to the discharging and storage plant so that we hope to unload one of these ships, which will carry 7,000 tons, in not over ten hours, and we will have storage capacity in Everett of nearly 100,000 tons. Our pocket, of storage plant, will be connected by rail with the Boston & Albany and the Boston & Maine Railroad systems, so that it will be possible for the manufacturer to purchase his coal f. o. b. cars in Everett and obtain a regular weekly supply, and we hope at a price considerably less than what is now being paid for same. Ultimately, we expect to load the ships in from five to six hours at a modern terminal that is now being constructed, in which event we will be able to run the boats between the loading point and the discharging terminal with regularly and we hope that a ship will never be in port over one day. This will mean a great saving to consumers of coal (others, as well as ourselves) and judging from the talks I have had with large manufacturers in eastern Massachusetts and southern New Hampshire they appreciate that fact as well as we.

"When it was finally decided upon the type of ships that we thought it advisable to construct, we looked about to see who we should get to build them, and I think that we people here in New England, especially in Massachusetts, are to be congratulated that a ship building company exists in our midst that could give us a price which made it desirable for us to award the contract to them for the construction of these boats. I am sure that my associates were all very much pleased and gratified; that we were justified in having these boats constructed here by the Fore River Ship Building Co., a home industry in every sense of the word, a large corporation having millions of dollars invested and giving employment to about 4,000 people. For in these days, since we have lost from Boston and New England many of the large corporations that we had in former days, it is not only desirable to get new capital invested in

new enterprises, but to foster, maintain and help those we already have to do a larger business.

"One thing I wish to say in justice to the Fore River Ship Building Co. that, so far as I know, they have done everything up to the present time that they agreed to do; that there have been no delays, and that the ship Everett is being launched on time and will be delivered to us, so I am told, at the time promised, which is greatly to the credit of the Fore River Ship Building Co., it seems to me, for, as you who have had to do with construction the last year, know how we have all been delayed on 90 per cent of our construction work, long beyond the contract limit.

"Seeing some of the gentlemen here, who spend much of their time and energy in Washington, reminds me of how little the United States government has done in the recent past to encourage the ship building industries of the United States. I fear that few of us realize the handicap under which the shipping industry is being conducted by Americans at the present time. I have recently returned from an extended trip, having spent of my time 58 days on the water, during which period my attention was naturally called to shipping, and commerce connected therewith, and, as an American, I must confess that I was not very proud of the fact that in the various ports I entered it was seldom that I saw the American flag. During the latter part of my trip I crossed the Pacific on a ship flying the American flag, the Minnesota. As you will remember, there were two boats built by the so-called Hill interests down in New London, Conn., a few years ago, one called the Minnesota and one the Dakota, both fine ships. The Dakota was lost recently and I was told that she would not be replaced, and that the Minnesota was for sale and that the Japanese were negotiating for its purchase. I understood that the reason why the Dakota was not to be replaced and the reason why the Minnesota was for sale was because American-owned ships could not compete, under existing conditions, with foreign-owned vessels. I was also told that an old American line running between the Pacific coast and Australia was about to discontinue for the same reason.

"I became firmly convinced from what I saw and heard that, if the shipping industry expected to compete with England, Germany, France and Japan, the United States would have to do, for that industry in our

country, the same as these foreign countries do by their people, and I hope the time will come when this country will awaken to the necessity of doing something in this line, so that the American flag will at least have an equal opportunity in the world's commerce with that of any other nation on the face of the earth."

Following were the invited guests:

Samuel N. Aldrich, Nathan Anthony, J. P. Armington, Mr. and Mrs. W. H. Allen, Chas. W. Atkins, Chief of Police Burrell, Mr. and Mrs. F. L. Brake, Thos. F. Burke, commissioner of public works; Roy Baker, Henry D. Bennett, John T. Boyd, Hon. Thos. J. Boynton, mayor; Geo. W. Bunton Jr., alderman; Councilman J. Albert Baader, Councilman Charles L. Brown, Hon. Wm. Berwin, Harry Burnett, Henry Bartlett, supt. Motive Power; George L. Barnes, Edward Brooks, Mr. and Mrs. Wallace I. Bacon, Miss Marion Boynton, Chester M. Bliss, Joseph Burns, Gustav Braun, Robert Bruce, Fulton Blake, A. C. Baldwin, C. W. Barron, F. E. Barker, Mr. and Mrs. Harry Brown, F. F. Crane, Mr. and Mrs. J. J. Crain, John F. Crocker, Edw. F. Clapham, Wm. F. Crowley, councilman; Fred N. Colby, councilman; John N. Cran, councilman; City Clerk Joseph H. Connell, Columbus Corey, Edw. S. Crandon, Chas. Fox, Miss E. Fox, Henry B. Chapin, W. N. Cooksey, James Chambers, member of legislature; Misses Laura and Effie Cowles, Samuel P. Cannell, G. Cornett, Dr. and Mrs. H. J. Chapman, A. Cherry, Wm. A. Carleton, John R. Chapin, Henry B. Chapin Jr., J. G. Crowley, Adams D. Claflin, E. H. Downing, Hon. and Mrs. Chas. L. Dean, Francis J. Dooley, F. C. Du Maine, Edgar A. Dow, Fred F. Driscoll, Mrs. Edgar A. Dow, L. N. Duchesney, Mr. and Mrs. H. S. Epes, Mr. and Mrs. E. F. Eaton, Miss F. G. Everest, Arthur C. Farley, Chas. A. Furness, W. J. Follett, Frederick A. Flather, T. B. Fitzpatrick, H. O. Fairbanks, Henry M. Faxon, Chas. R. Ford, city auditor; H. W. Fisher, E. J. Feeley, Dr. M. W. Freeman, Dr. H. W. Gross, Lieut. Comdr. and Mrs. John L. Gow, Mr. and Mrs. J. A. Gould, Dr. and Mrs. W. W. Goodwin, Rep. and Mrs. Eugene C. Hultman, Mr. and Mrs. Campbell Humphreys, Capt. W. F. Humphreys, Mr. and Mrs. Chas. S. Homer, Sidney Harwood, Thomas I. Holmes, Henry L. Higginson, Franklin W. Hobbs, Wm. Hooper, Wm. F. Hammett, Esq., J. E. Harlow and friend, Mr. and Mrs. Hermiston, Miss Jennie E. Henderson, Christopher Harrison, Mr. and Mrs.

Haynes, T. T. H. Harwood, F. A. Jones, Thos. A. Jansen, W. F. Jones, Mr. and Mrs. J. F. Kemp, Walter C. Katzmann, F. A. Kennedy, James J. Killilea, A. W. Kincaid, Wilbur Sargent Locke, Mr. and Mrs. Ralph Lovell, Hon. Geo. H. Lyman, James Longley, Mr. and Mrs. Geo. M. Livermore, Dr. and Mrs. F. H. Lynde, Mrs. Geo. A. Libby, General Nelson A. Miles, Mr. and Mrs. S. T. MacQuarrie, Jas. F. Mullen, W. L. Marvin, Mr. and Mrs. Chas. H. Manning, Capt. J. W. Miller, J. R. Middleton, Hon. William S. McNary, Gardner E. Murphy, B. S. Murphy, J. W. McGrath, Geo. C. Markham, Hon. Eugene H. Moore, Chas. Moore, James I. Millikan, J. M. McClellan, Capt. W. E. McKay, Daniel D. Morse, W. L. Marvin, Mr. and Mrs. C. C. Marvel, Micheal McNamara, Geo. A. D. Munroe, Mrs. G. A. Monroe, Miss Laura Miller, Geo. A. Murphy, Mr. and Mrs. Edw. B. Mellen, Eugene Nelson, Councilman J. Arthur Nelson, Nathan Nichols, Mr. and Mrs. W. B. Nichols, Mr. and Mrs. Jesse S. Newcomb, A. W. Newell, Chas. C. Nichols, Francis A. Osborn, Hon. Andrew J. Peters, Alex. A. Porter, Herbert A. Partridge, Mr. and Mrs. Frank E. Porter, Mr. and Mrs. Frank S. Patch, Alfred Pierce, C. C. Patterson, Geo. B. Poole, Frank T. Pettingell, Hon. Samuel L. Powers, Asst. Naval Constr. and Mrs. G. S. Radford, Mr. and Mrs. Jos. Remick, Alfred T. Rogers, Neal Rantoul, J. S. Rusk, Mr. and Mrs. James L. Richards, Mr. and Mrs. Chas. Theo. Russell, Frank B. Rich, Don A. Riley, Frederick E. Snow, Mr. and Mrs. J. A. Sedgwick, Chas. Skentelbery, J. B. Sharkey, A. Shuman, Sinclair Stewart, Mr. and Mrs. Geo. W. Stinson, John Shepard, Eben Shepard, Chas. W. Smith, Elmer E. Spear, Mr. and Mrs. Geo. Simpson, H. G. Smith, Hon. Chas. J. Tirrell, Mr. and Mrs. Frederick Tudor, Mr. Townsendl, Walter Tufts, Frederic H. Viaux, Alden E. Viles, Lieut. Comdr. Roger Welles, Naval Constr. and Mrs. R. M. Watt, Mr. and Mrs. F. O. Wellington, Arthur Wainwright, William Wallace, Hon. John W. Weeks, Leslie C. Wead, Henry Whitmore, Erwin H. Walcott, C. Minot Weld, Alonzo R. Weed, Mr. and Mrs. W. A. Wood, Jas. E. Whitney, John J. Whipple, Mr. and Mrs. E. N. Withington, R. E. Wright, George H. Wood, Wm. E. Weeks, Miss Gertrude Woolner.

The steamer Saronic, of the Northern Navigation Co.'s fleet, was dry docked at the yard of the Detroit Ship Building Co. this week for repairs to her wheel bearings.

AROUND THE GREAT LAKES.

The Racine Boat Manufacturing Co., Muskegon, Mich., has amended its bid for the construction of a tug for the use of the government engineer at Duluth and has accordingly been awarded contract.

The Toledo & Ohio Central ore dock at Toledo, recently made a record for that port. In unloading the steamer Philip Minch, 8,572 tons of ore were taken out in 13 hours and 5 minutes.

While entering the port of Buffalo this week the steamer James P. Walsh crashed into the Union liner Starucca, bending a number of plates and doing other damage. The Starucca was lying at the Lackawanna dock discharging cargo.

A revision in colors of coast chart No. 1, Lake Michigan, showing the coast from Manitowoc to Sturgeon Bay, Wis., has just been issued by the United States lake survey and is for sale by the MARINE REVIEW.

The steamer Hurlbut W. Smith, which has been on the beach since January last, was floated this week by wreckers under the general superintendence of Capt. W. W. Smith of the Pittsburg Steamship Co. The Smith will be repaired at Toledo.

The Buffalo Ship Chandlery & Supply Co. are back in their old quarters, 11 and 13 Main street, Buffalo. Since their fire last fall, the building has been entirely rebuilt, and more conveniently arranged to take care of their rapidly increasing trade.

The wooden steamer Oregon, which has recently been rebuilt into practically a new boat by the Milwaukee Dry Dock Co., has been sold by her owners, J. A. Callick & Co., Chicago, to J. W. Squires, of Marine City. The Oregon was sunk in the West Menominee river two winters ago and was submerged for several months. The repairs amounted to \$30,000.

The Detroit & Buffalo Steamboat Co. have issued a card to all ticket agents directing them to advise passengers that all rail tickets reading via the Michigan Central, Grand Trunk or Wabash railroads between Detroit and Buffalo or Detroit and Niagara Falls Suspension bridge are available for transportation on the Detroit & Buffalo Line steamers in either direction. This convenient arrangement enables travelers between the east and the west to enjoy the delights of a cool lake and river ride and a comfortable night's rest enroute. Rail tickets are also honored for transportation on the Detroit & Cleveland steamers.

DIFFICULT PROBLEM SPLENDIDLY HANDLED

Although the record breaking performances of the Duluth, Missabe & Northern railroad in hauling ore from the Mesabi range to the Duluth docks have excited attention and admiration because of the tonnage handled, the real significance of the accomplishment is little recognized because the real problem is little known. This carrier has a railroad problem entirely its own, a problem in which not only the railroad itself is interested but which concerns the vessel interests whose boats load at the Missabe docks and the furnace interests which use this ore. It is a unique problem with the Missabe road, not because the Great Northern and Duluth & Iron Range railroads never have to meet it, but because the mixing of the ore from the mines whose output the Missabe road handles, is a continuous operation and involves practically every car of ore shipped.

To illustrate concisely the extent to which this consideration enters in of so mixing the various ores from the different mines, that from the time the ore leaves the range till it is emptied into the dock, only 80 miles away, the ore from all the hundred or so shovels and numerous shafts shall have been classified into but five groups of guaranteed analysis from which analyses a variation of not more than a fraction of a per cent is allowed, the guarantee covering not only iron, but also phosphorus, silica and manganese, the following statement avails in a measure. There was shipped up to July 1 from the Duluth docks approximately 4,100,000 tons or allowing an average of 2,500 tons to the train, the contents of 1,640 trains. This is a conservative number of trains but something of the situation may be realized when of all that number scarcely a dozen trains have contained ore of such analysis as to permit of being run straight from the mines to the docks without being broken up for mixing. In the last month an average daily tonnage of over 80,000 has been shipped, practically all of which had to be manipulated.

The handling of the major portion of this mixing is directed from the office of the Oliver Iron Mining Co. at Hibbing. The considerations governing are hard and fast limitations. The railroad and mining operations must not be delayed, every cargo must meet one of five guaranteed analyses, and each boat to be loaded must have

for a certain draught so many tons of ore. That all these requirements can be met continuously with absolute precision is readily seen to be impossible and because they cannot be is why the mines complain of lack of empties, the boats complain of delays and slow loading at the Duluth docks, and the furnaces complain that the ore they have received is off grade. A certain amount of complaint is probably necessary or at least expedient in keeping the wheels going at the present strenuous pace and in obtaining the best results possible but it is also to be remembered that the ore is as it is, and pig iron must be made from the ore as it is and not as we wish it might be.

To begin with the operator at Hibbing receives from the dock a 24-hour notice of the boats due to arrive in the next 24 hours, and the group or kind of ore they are coming after. This gives him an idea of the tonnage of the boats he has to fill and he begins to lay out or perhaps better build up in the dock what are called "blocks" of ore each block having a number. The dock agent keeps track of the various blocks noting the pockets in which they lie and so far as possible the blocks are not split up and put in separated portions of the dock. The boat cargoes are then made up of these blocks, a typical order for loading being, "load the Smith with block No. 307" or "load with blocks Nos. 570 and 502" or perhaps "load the Brown with block 387 and 500 tons of block No. 185." It is evident then that these blocks must have been so prepared that when loaded into the boat they constitute a cargo of the correct average analysis and of the given tonnage.

This can be made the more clear by turning to the work of the Hibbing office. When the loaded ore cars are hauled from the mine or shaft pocket to the mine siding a sample is taken from each ten cars and when a train is made up and started down toward Duluth the sample with the numbers of the cars from which it is taken is sent to the laboratory for analysis which analysis is then reported to the operating office at Hibbing. When the train reaches Keenan, a short distance down the road, the conductor telegraphs back his train report confirming the car numbers. A "train sheet" is then made out and the analysis placed opposite the groups of ten cars making up the

train of from forty to fifty cars. From the analyses the tonnage of ore shipped is estimated and the separation into blocks is begun.

The principal distinction is of course between Bessemer and non-Bessemer ores, but it is also maintained with regard to iron, silica and manganese and the five groups are designed to cover these variations. Therefore, wherever the several parts of the train load are sufficiently different from each other in analysis to approach in character one group rather than another they are given a block number. That ore also which may be half way between two groups will be disposed in the same way. The ore left in the dock must also be renumbered and oftentimes the entire train is added to blocks already started in the dock, the added ore if both are off grade, being used to raise or lower the average analysis of the block.

Each cargo is considered as containing so many units of each element, the number of units depending on the group and the tonnage. Therefore, in building the blocks, the number of units each contains is first figured from the estimated weight while the train is enroute. When the train reaches Proctor and is actually weighed a correction is made and the necessary units added or subtracted, and as a result a certain block may have to be changed from one boat to another. As soon as the operator at Hibbing has the train "blocked out" he telegraphs to the transfer yards at Proctor his orders and the various blocks of ore are switched out and new trains made so that the ore can be dumped on the proper dock and proper place without any switching on the dock.

It is evident that the blocks must be as varied in size as the boats are in tonnage. No block must be allowed to run so far "off grade" in taking care of the ore coming down as to make it impossible of neutralizing without adding more ore than any boat would hold. There must also be provided what are called "balance blocks" which analyze "on grade" and with which a cargo almost completed may be finished where the blocks have not been quite sufficient. It is also evident that in every case the entire block must be taken by the boat since it is only the average analysis which meets the group requirements

and it may be that the few hundred tons of ore left may be just the ore required to bring the cargo to grade.

Thus it happens oftentimes that a 5,000-ton and a 10,000-ton boat may neither of them be able to load although there may be much more than their capacity of ore in the deck, simply because just the right combination of blocks cannot be obtained. For the same reason the larger boat may be able to load where the smaller one cannot. It also happens that one boat may take precedence for this reason of another arriving ahead of it, or in order to give each boat its turn the boat's orders may have to be changed from one group to the other.

How endless the opportunities are for delaying the boats a little and for shipping a cargo a little "off grade" may be easily appreciated. For instance a bad order car thrown out or the difference between the estimated weight and the actual weight as determined at Proctor may put into a cargo more or less ore of a certain grade than it should have without there being any time to prevent it, the distance from Proctor to the docks being but little more than five miles.

Adding to the problem has come the necessity for a more thorough mixing of the ore in the boats the present system accomplishing more of a mathematical mixture than a real physical mixture. It has been asked that instead of just dumping the ore into the boats as it comes, it be strewn layer by layer, alternating the

different grades of ore, so that instead of the possibility of having all the high silica ore in one part of the hold and all of the low in another, an even distribution may be obtained. Plans are now on foot to bring this about and it means either taking more room in the dock for each with more shifting or the building of immense switching yards at Proctor where a train can be made up two or three cars at a time doing all the mixing before the ore gets to the dock. In either case the railroad has a tremendous problem on its hands and it is handling it in splendid fashion.

MCKINNON IRON WORKS.

One of the most important institutions at Ashtabula Harbor is the Mc-



HON. W. S. MCKINNON.

Kinnon Iron Works which has grown from the smallest of plants. The complete plant now includes a commodious office and supply building, a blacksmith shop, a machine shop, an oil house and a building to store pipe and fittings in. The machine shop is 50 x 120 ft.; the office, 19 x 85; the blacksmith shop, 50 x 75; the stock room, 20 x 30; the boiler room, 20 x 45; the oil house, 25 x 80, and the pipe house, 30 x 60. All but one of the structures is brick.

The machine shop is constructed on modern lines, with good sanitation and plenty of light and ventilation. A 10-ton traveling crane runs through its entire length to the dock on the edge of the river, where a crane has been erected to hoist heavy work aboard-ship. The machinery consists of lathes from 20 inches up to 60 inches, 1 open

side planer, one 24 x 72 inch planer, 2 shapers, 1 milling machine, one 42 inch radial drill, drill presses from 20 to 38 inches, 1 six-inch pipe machine; a bolt and pipe cutter and other indispensable machines.

The blacksmith shop is a model building with plenty of room for big jobs and four forges with which to do them. It is well lighted and faces on the railroad which runs along Columbus street. In addition to the four forges, there are two forges used for flanging, an 800-pound steam hammer, one set of 10-inch power rolls, a punch and shears and two five-ton cranes.

The oil house is of concrete construction in the interior, with a view to making it absolutely fire-proof. It is located at the southwest corner of the plant, close by the river. The machine shop and the office building are also equipped with a concrete floor. The general plan of construction for all the buildings is brick and steel frame work.

A disastrous fire visited the plant August 26, 1906, and completely destroyed it, but six months later a better one was in its place.

It is the boast of the proprietors of the McKinnon Iron Works that there is no job, except putting a boat in dry dock which can not be done by them.

A blacksmith shop was the starter for the iron works. There was only one lathe and drill press in it, with a few other tools. Young McKinnon did all his own work with the assistance of a blacksmith and helper. Mr. McKinnon's career is another example of what can be done by sticking to a



MCKINNON IRON WORKS, FACING ON BRIDGE STREET.



HERBERT A. MCKINNON.

thing and bringing it to completion over every obstacle which presents itself. He was born at Owen Sound, Ont., and at the early age of 13 was working in a machine shop in his home town. When he was 18, he came to

der the company's patents, of heavy motor engines, pumping plants and marine gas engines. The company has a capital stock of \$1,800,000 and a bond issue of \$400,000.

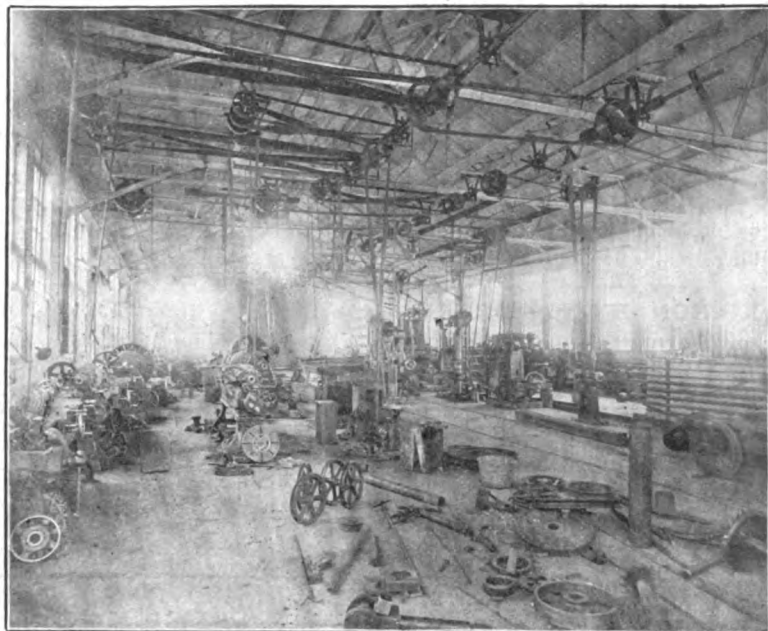
A meeting of the individual car

use of the individual car when delayed.

The yacht Hildegarde, built in 1874 to the order of the Prince of Wales, now King Edward VII of England, at a cost of \$80,000, is being broken up at the dock of Frank R. Long on the Hackensack river. She was purchased by Mr. Long in December, 1905, for use as a freight steamer on the Hackensack river but as her keel was too deep she was useless for this purpose. The hull was of Chinese teak and is being utilized for the construction of souvenirs, one of which will be sent to King Edward.

Rear Admiral Willard Herbert Brownson who has filled the office of chief of the bureau of navigation since the retirement of Rear Admiral Converse has been placed upon the retired list on account of age, but like his predecessor, Rear Admiral Converse, by special direction of the president he will remain at the head of the bureau. Admiral Brownson's record on the active list has been a brilliant one and he reached the rank of rear admiral May 6, 1905.

The Austro-American line has placed an order with the firm of Russell & Co., Glasgow, for the construction of a new steamer for that line which will be larger and faster than the new twin-screw steamers Laura and Alice, the former of which is already in service and the latter to make her first trip from Trieste in August. The



MCKINNON IRON WORKS—INTERIOR OF MACHINE SHOP.

Cleveland and started in with the Globe Iron Works. He remained with them five years and then went with the Briton Iron & Steel Co. for four years as chief engineer.

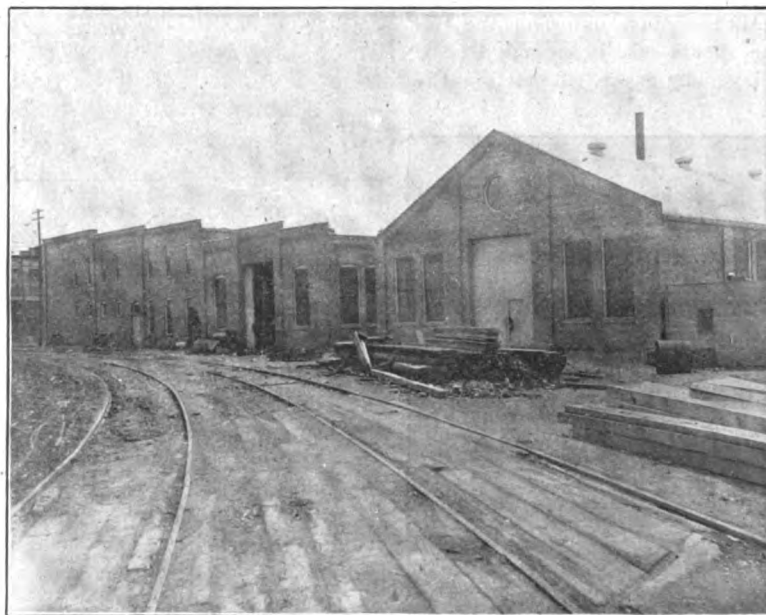
Before he rounded out his experience and started in at Ashtabula, Mr. McKinnon sailed on the lakes as a second engineer on the old steamer Isaac May, which plied between Buffalo and Georgian Bay ports. The work done on board that boat came handy to him later in giving him an idea of just what is needed aboard ship in the way of machinery and repairs.

Mr. McKinnon now occupies the dignified position of treasurer for the state of Ohio, serving his second term. He started his political career by all the offices within the gift of his adopted city, including the council presidency, the board of education and the mayoralty. He also served three terms in the state legislature, being speaker of the house the last term. He is also regarded as one of the Republican gubernatorial possibilities.

MISCELLANEOUS ITEMS.

The Standard Motor Construction Co., Tottenville, Staten Island, N. Y., in which ship builder Lewis Nixon, former head of the ship yard combination, is much interested, is offering bonds through a New York banking firm. A large factory is to be built at Tottenville for the manufacture, un-

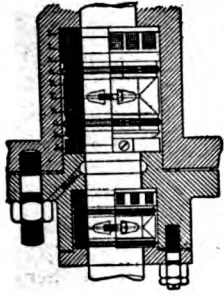
owners of the United States will be held in Cleveland on Thursday and Friday, Aug. 1 and 2, for the purpose of forming an association to protect their interests. In the circular calling this meeting it is stated that the



MCKINNON IRON WORKS—MACHINE SHOP AT EXTREME RIGHT.
BLACKSMITH SHOP WITH DOOR OPEN, OFFICE AND SUPPLY
BUILDING AT LEFT.

most pressing questions are the placing of the individual car on an equal basis with that of the railroad company car and the application of the per diem charge to also govern the

steamer, which is to be named the Martha Washington, is to be fitted with twin screws and by contract with the builders is to be delivered for service in February of 1908.



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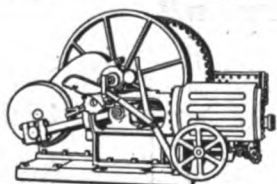
CLEVELAND, O.

INDEX OF ADVERTISERS

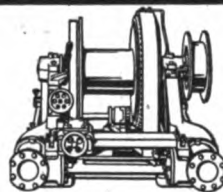
The star (*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on page noted.

The dagger (†) indicates that advertisement appears once a month.

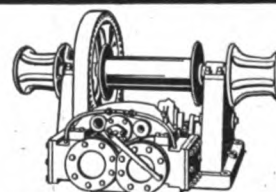
†Akers Steering Co.....	—	Donnelly Salvage & Wrecking Co.....	43	Lockwood Mfg. Co.....	50	†Rogers Steam Oil Separator Co.....	—
Almy Water Tube Boiler Co..	37	Douglas, G. L., Jr.....	48	Lorain Coal & Dock Co.....	49	Root, W. O.....	49
American Blower Co.....	52	Drein, Thos., & Son.....	43	Lundin, A. P.....	52	Ross Valve Co.....	50
American Injector Co.....	13	Dunbar & Sullivan Dredging Co.....	39	Lunkenheimer Co.....	13		
American Line.....	47	Elphicke, C. W., & Co.....	48	McCarthy, T. R.....	48	Safety Car Heating & Lighting Co.....	9
American Sawdust Co.....	41	*Emerson Shoe Co.....	11	McCurdy, Geo. L.....	35	Scherzer Rolling Lift Bridge Co.....	43
American Ship Building Co..	4	†Empire Shipbuilding Co.....	—	McKinnon Iron Works.....	51	Schrader's A., Son, Inc.....	50
American Ship Windlass Co..	2			MacDonald, Ray G.....	48	†Scoville Check Valve Co.....	—
Armstrong Cork Co.....	52	Falls Hollow Staybolt Co....	41	Mallory Line.....	47	†Seneca Chain Co.....	—
*Armstrong Manufacturing Co.	11	Fix's, S., Sons.....	50	*Marine Iron Co., Bay City, Mich.....	11	Shaw, Warren, Cady & Oakes	48
†Ashton Valve Co.....	—	Fletcher, W. & A., Co.....	47	†Marine Mfg. & Supply Co..	12	*Shelby Steel Tube Co.....	37
Atlantic Works.....	47	Fogg, M. W.....	50	Marshall, Alexander.....	48	Sheriffs Mfg. Co.....	43
†Atlantic Works, Inc.....	—	Fore River Ship Building Co.	47	Martin-Barriss Co.....	43	Shipping World Year Book...	50
		Furstenau, M. C.....	49	Maryland Steel Co.....	10	Siggers & Siggers.....	41
Babcock & Penton.....	49	General Electric Co.....	52	Maytham, Frank.....	48	Smith Coal & Dock Co., Stanley B.....	3
Baker, Howard H., & Co.....	52	Gilchrist, Albert J.....	48	Mehl, Edward.....	48	Smooth-On Mfg. Co.....	51
Belcher, Fred P.....	48	†Goldschmidt Thermit Co.....	—	Milwaukee Dry Dock Co....	5	†Spence Mfg. Co.....	—
Boland, J. J.....	48	Goulder, Holding & Masten..	49	Mitchell, & Co.....	48	Spencer, H. R.....	48
*Boston & Lockport Block Co.	12	Great Lakes Dredge & Dock Co.....	39	Morse, A. J., & Son.....	49	Standard Varnish Works.....	35
†Boucher Mfg. Co., The H. E.	—	Great Lakes Engineering Wks.	14	Nacey & Hynd.....	49	Starke, C. H., Dredge & Dock Co.....	39
Bowers, L. M., & Co.....	43	Great Lakes Register.....	49	†New Bedford Boiler & Machine Co.....	—	Stratford, Geo., Oakum Co..	41
Breyman, G. H., & Bros.....	39	*Great Lakes Towing Co.....	9	Newport News Ship Building & Dry Dock Co.....	6	Submarine Signal Company..	9
Briggs, Marvin.....	38			New York & Cuba Mail S. S. Co.....	47	Sullivan, D., & Co.....	48
Brown & Co.....	48	Hall, John B.....	48	New York Shipbuilding Co..	7	Sullivan, M.....	39
†Brown Hoisting Machinery Co.....	—	Hanna, M. A., & Co.....	41	†Nicholson Ship Log Co....	—	†Superior Iron Works.....	—
Buffalo Dredging Co.....	39	†Hardy & Dischinger Co.....	11	Nicholson Dredge Co.....	39	Superior Ship Building Co..	4
Buffalo Dry Dock Co.....	5	Hawgood, W. A., & Co.....	48	Northwestern Steam Boiler & Mfg. Co.....	37		
†Buffalo Ship Chandlery & Supply Co.....	—	Helm, D. T., & Co.....	48	O'Connor, J. J.....	48	Taylor Water-Tube Boiler Co.	37
Bunker, E. A.....	52	Holmes, Samuel.....	48	†Oster Mfg. Co.....	—	Tietjen & Lang Dry Dock Co.	50
		Hoyt, Dustin & Kelley.....	48	†Otis Steel Co.....	9	*Toledo Fuel Co.....	41
Chase Machine Co.....	36	Hunt, Robert W., & Co.....	49			Toledo Ship Building Co....	5
Chicago Ship Building Co....	4	Hutchinson & Co.....	48			†Toledo White Lead Co.....	—
Cleveland & Buffalo Transit Co.....	47	Hyde Windlass Co.....	52	Parker Bros. Co.....	48	Trout, H. G.....	43
Cleveland City Forge & Iron Co.....	51	†Ideal Pump Governor Co....	—	Penberthy Injector Co.....	13	Truscott Boat Mfg. Co.....	2
*Collingwood Shipbuilding Co.	5	International Mercantile Marine Co.....	47	Pickands, Mather & Co.....	41		
†Columbian Rope Co.....	—	Jenkins Bros.....	52	Pittsburg Coal Co.....	41	Upson-Walton Co.....	35
Continental Iron Works.....	2	Jenkins, Russell & Eichelberger	48	Prindiville & Company.....	49	†United States Graphite Co..	—
Cory, Chas., & Son.....	50	Johnson Bros.....	37	Quintard Iron Works Co....	50	Vance & Joys Co.....	48
Cramp, Wm., & Sons S. & E. B. Co.....	8	Kahnweiler's Sons, David....	51			Walker, Thomas, & Son.....	3
†Crescent Machine Co.....	—	Katzenstein, L., & Co.....	35	Red Star Line.....	47	Ward Line.....	47
Curr, Robert.....	49	Kidd, Joseph.....	49	†Reilly Repair & Supply Co..	—	Warner, Dorr E.....	48
		Kingsford Foundry & Machine Works.....	37	Republic Belting & Supply Co.	35	Warner & Swasey.....	12
Dake Engine Co.....	3	Kremer, C. E.....	48	Richardson, W. C.....	48	*Watson-Stillman Co.....	51
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Delaware River Iron S. B. & E. Works.....	51			Roelker, H. B.....	50	†Williams Gauge Co.....	—
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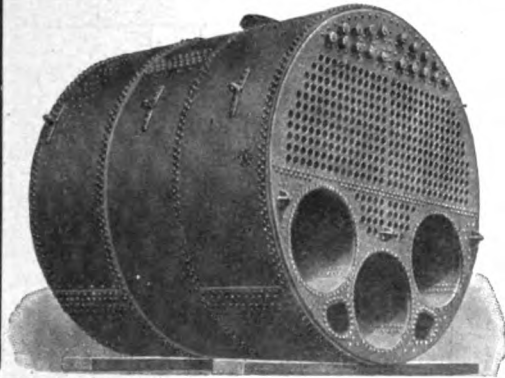


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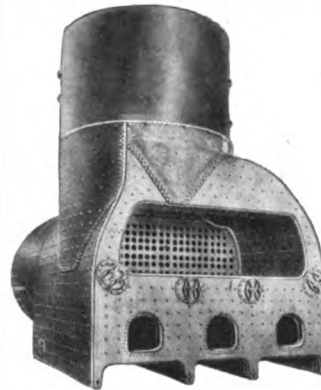
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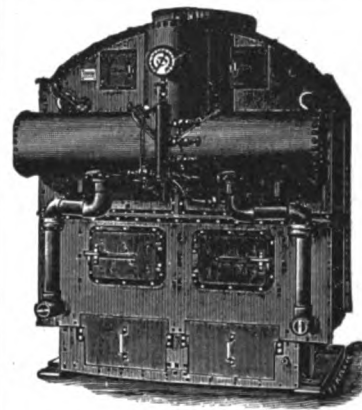
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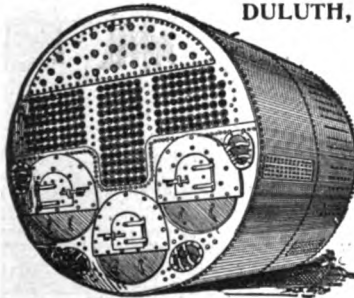
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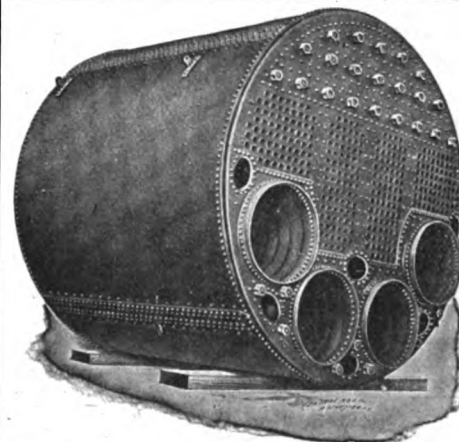


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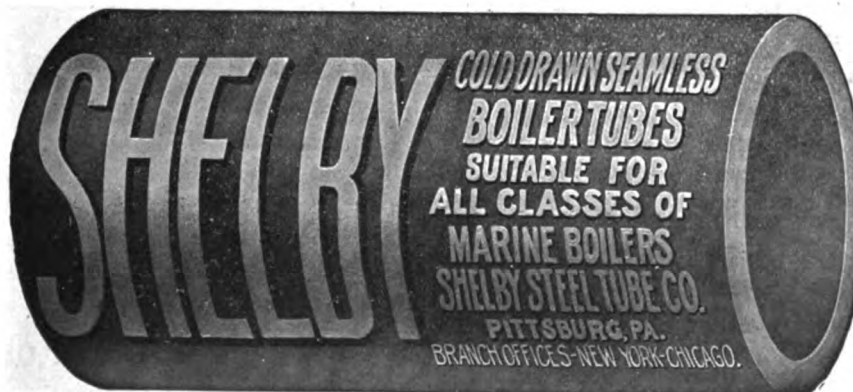
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